U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
SOUTHERN REGION
P. O. BOX 53326
NEW ORLEANS, LOUISIANA 70153

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

POSTAGE AND FEES PAID
U. S. DEPARTMENT OF
AGRICULTURE
AGR 101

MATERIALS SCREENED AS ANIMAL SYSTEMIC INSECTICIDES AT KERRVILLE, TEXAS, 1967-1973

ARS-S-101
February 1976

AGRICULTURAL RESEARCH SERVICE • U.S. DEPARTMENT OF AGRICULTURE

CONTENTS

TABLES

ACKNOWLEDGMENTS

T. M. Whetstone and S. E. Ernst, both Biological Technicians of this laboratory, provided technical help in the conduct of these tests. Mrs. E. M. Osborne, head, Chemical Coordination Unit, Agricultural Environmental Quality Institute, Agricultural Research Service, Beltsville, Maryland, verified the chemical nomenclature presented in table 2.

MATERIALS SCREENED AS ANIMAL SYSTEMIC INSECTICIDES AT KERRVILLE, TEXAS, 1967-1973

By R. O. Drummond[1]

ABSTRACT

This report presents the procedures and results of tests with 474 chemical compounds screened by the guinea pig-multiple arthropod test to determine their activity as systemic insecticides against larvae of the black blow fly, Phormia regina (Meigen), larvae of the screwworm, Cochliomyia hominivorax (Coquerel), larvae of the secondary screwworm, Cochliomyia macellaria (F.), adults of the stable fly, Stomoxys calcitrans (L.), and nymphs of the lone star tick, Amblyomma americanum (L.), on guinea pigs treated orally or subcutaneously. Of the 157 systemically active compounds, 128 (81 percent) were active against fly larvae, 74 (47 percent) were active against adult stable flies, and 95 (60 percent) were active against ticks. Nineteen compounds (12 percent) were systemically active orally, 27 (17 percent) were active subcutaneously, and 111 (71 percent) were systemically active both orally and subcutaneously. Also, 99 compounds (63 percent) were systemically active at dosages lower than those lethal to guinea pigs, and 58 (37 percent) were systemically active at dosages equal to or greater than those lethal to guinea pigs.

INTRODUCTION

In an effort to detect the systemic activity of materials administered to animals, a screening test, the guinea pig-multiple arthropod test, was established at the U.S. Livestock Insects Laboratory, Agricultural Research Service, U.S. Department of Agriculture, Kerrville, Tex., in 1953. Before that date, a number of materials were evaluated as systemics in both in vivo and in vitro tests with first-instar larvae of Hypoderma lineatum (de Villers), the common cattle grub (1).[2] McGregor and Bushland (22) described a test procedure in which guinea pigs infested with larvae of the screwworm,

---

[1]Location and research leader, U.S. Livestock Insects Laboratory, Agricultural Research Service, U.S. Department of Agriculture, P.O. Box 232, Kerrville, Tex. 78028.

[2]Underscored numbers in parentheses refer to items in "Literature Cited" preceding table 2.

Cochliomyia hominivorax (Coquerel), were treated subcutaneously with candidate compounds. Also, techniques were developed for feeding stable flies, Stomoxys calcitrans (L.), and lone star ticks, Amblyomma americanum (L.), on guinea pigs treated orally or subcutaneously. Some modifications and standardizations in the testing procedures were reported by Drummond (2). Graham (21) included the Kerrville testing procedure in his description of techniques to detect the activity of animal systemic insecticides. In 1962, because of the program to eradicate screwworms from the Southwestern United States, it was necessary to replace screwworm larvae with larvae of the secondary screwworm, C. macellaria (F.), and the black blow fly, Phormia regina (Meigen); details of the change in technique were presented by Drummond (8). This technique remained unchanged until the test was discontinued in 1973.

In a series of papers (3, 5-11, 13-15, 18, 19), the results of screening tests with the guinea pig-multiple arthropod model and results of secondary tests on cattle with 231 systemically active insecticides for the control of cattle grubs, Hypoderma spp., were presented. In addition, Drummond (4, 12) presented the results of screening tests with 438 compounds and with 640 compounds. This report contains results of an additional 474 compounds screened by the same technique. Most of these compounds were tested during 1968-1973, although some were tested earlier, and identification of the chemical structures was obtained after publication of the previous papers.

EXPERIMENTAL PROCEDURES

The procedures were explained briefly by Drummond (2, 8) and in detail by Graham (21) and Drummond (12). Guinea pigs were infested with 10 starved nymphal lone star ticks about 48 hours before treatment. About 24 hours before treatment, the guinea pigs were wounded, and the wounds were infested with the larvae of the screwworm, secondary screwworm, or black blow fly. At the time of treatment, the guinea pigs were weighed and treated orally or subcutaneously at specific dosages of candidate chemicals, usually formulated as 5-percent solutions in Tween-20 (polyoxyethylene sorbitan monolaurate). The initial dosage was usually 100 milligrams per kilogram. Approximately 4 hours after treatment, about 30 starved adult stable flies were allowed to engorge on the guinea pigs. The fed flies were held for 24 hours, and then mortality was recorded. At 24 hours after treatment, additional stable flies were fed on the guinea pigs, and wounds were examined for live larvae. About 3 to 5 days after treatment, engorged nymphal ticks were collected and held for at least a month. Mortality of the ticks was determined during the engorging and molting periods.

If any of the arthropods or guinea pigs were killed at initial dosages, lower dosages--50, 25, 10, or 5 milligrams per kilogram etc.--were administered until there was either no systemic activity or the guinea pigs survived.

RESULTS AND DISCUSSION

Of the 474 compounds tested, 157 (33 percent) were systemically active. Data from the two previous reports (4, 12) and this report combined resulted in a total of 1,552 compounds tested and, of these, 420 (27 percent) were systemically active (table 1).

TABLE 1.--Spectrum of activity of systemically active compounds screened from 1953 to 1973

Arthropod active against	No. compounds	
	From table 2	Total[1]
Fly larvae	27	109
Fly larvae and stable fly adults	24	81
Fly larvae and ticks	42	60
Fly larvae, stable fly adults, and ticks	35	82
Stable fly adults	11	46
Stable fly adults and ticks	4	13
Ticks	14	29
Total	157	420

[1]From table 2 plus compounds in references 4 and 12.

The results of tests with the 474 compounds are presented in table 2. The compounds are listed alphabetically by chemical nomenclature that was standard until 1972, since the materials were received and defined under that nomenclature. In the index, the compounds are listed by AI3 number (formerly ENT number)[3] with reference to the corresponding company number and item number from table 2.

Of the 157 systemically active compounds (table 1), 128 (81 percent) were active against fly larvae, 74 (47 percent) were active against adult stable flies, and 95 (60 percent) were active against ticks. As table 2 shows, 19 compounds (12 percent) were systemically active orally, 27 (17 percent) were active subcutaneously, and 111 (71 percent) were systemically active both orally and subcutaneously. Also, 99 compounds (63 percent) were systemically active at dosages lower than those lethal to guinea pigs, and 58 (37 percent) were systemically active at dosages equal to or greater than those lethal to guinea pigs.

Although the guinea pig-multiple arthropod test has been used to screen a large number of compounds and has detected over 400 systemically active insecticides, it has certain specific limitations with respect to the cattle-

[3]Numbers assigned by Agricultural Research Service to chemicals used in entomological investigations.

Hypoderma, host-parasite system, which is the target of the research. None of the arthropods in the guinea pig-multiple arthropod test migrates through the animal's body and produces furuncular myiasis as cattle grubs do. Also, because of the external feeding of ticks and flies and the presence of open wounds containing fly larvae in guinea pigs, we could not administer materials dermally to the guinea pigs.

As announced by Drummond et al. (17) and presented in detail by Gingrich et al. (20), a new host-parasite system, the mouse-Cuterebra test, was developed for screening animal systemic insecticides. In this test, white mice are infested nasally or orally with newly hatched larvae of Cuterebra fontinella, and 2 days later the mice are treated orally with candidate materials. Seven days after treatment, the mice are killed and examined for encysted larvae by noting breathing holes or by palpation. In addition to oral treatments, some mice are dipped in insecticides for dermal treatments (16). Effective systemics kill larvae while they are migrating through the mouse's body (a situation similar to the migration of first-instar Hypoderma larvae in cattle). Because of the greater relativity (to the cattle-Hypoderma cycle) and versatility of the mouse-Cuterebra test, this test replaced the guinea pig-multiple arthropod test in the spring of 1973. Thus, this is the last report containing results of the guinea pig-multiple arthropod test.

LITERATURE CITED

(1) Barrett, W. L., and Wells, R. W. 1948. Transplantation of Hypoderma larvae and testing chemicals for control of larvae in experimental hosts. J. Econ. Entomol. 41: 779-782.

(2) Drummond, R. O. 1958. Laboratory screening tests of animal systemic insecticides. J. Econ. Entomol. 51: 425-427.

(3) ___1960. Preliminary evaluation of animal systemic insecticides. J. Econ. Entomol. 53: 1125-1127.

(4) ___1961. Compounds screened as animal systemic insecticides at Kerrville, Texas, 1953-1959. U.S. Dep. Agric., Agric. Res. Serv. [Rep.] ARS 33-64, 50 pp.

(5) ___1962. Further evaluation of animal systemic insecticides, 1961. J. Econ. Entomol. 55: 398-402.

(6) ___1963. Further evaluation of animal systemic insecticides, 1962. J. Econ. Entomol. 56: 831-834.

(7) ___1964. Further evaluation of animal systemic insecticides, 1963. J. Econ. Entomol. 57: 741-745.

(8) ___1965. Further evaluation of animal systemic insecticides, 1964. J. Econ. Entomol. 58: 773-776.

(9) ___1966. Further evaluation of animal systemic insecticides, 1965. J. Econ. Entomol. 59: 1049-1053.

(10) ___1967. Further evaluation of animal systemic insecticides, 1966. J. Econ. Entomol. 60: 733-737.

(11) ___1968. Further evaluation of animal systemic insecticides, 1967. J. Econ. Entomol. 61: 1261-1264.

(12) ___1970. Materials screened as animal systemic insecticides at Kerrville, Texas, 1960-1967. U.S. Dep. Agric., Prod. Res. Rep. No. 116, 46 pp.

(13) ___Darrow, D. I., and Gladney, W. J. 1970. Further evaluation of animal systemic insecticides, 1969. J. Econ. Entomol. 63: 1103-1106.

(14) ___Darrow, D. I., and Gladney, W. J. 1971. Further evaluation of animal systemic insecticides, 1970. J. Econ. Entomol. 64: 1166-1170.

(15) ___Darrow, D. I., and Gladney, W. J. 1972. Further evaluation of animal systemic insecticides, 1971. J. Econ. Entomol. 65: 745-748.

(16) ___and Gingrich, R. E. 1972. Detection of systemic activity of insecticides applied dermally to white mice infested with larvae of Cuterebra sp. J. Econ. Entomol. 65: 1211-1212.

(17) ___Gingrich, R. E., and Gladney, W. J. 1970. A new test for detecting animal systemic insecticides. (Abstract). Proc. 2d Int. Congr. Parasitol., J. Parasitol. 56 (Sec. II, Part I): 85-86.

(18) ___and Gladney, W. J. 1969. Further evaluation of animal systemic insecticides, 1968. J. Econ. Entomol. 62: 934-936.

(19) ___and Whetstone, T. M. 1974. Cattle grubs: Evaluation of new animal systemic insecticides, 1971-1972. J. Econ. Entomol. 67: 237-239.

(20) Gingrich, R. E., Drummond, R. O., and Gladney, W. J. 1972. Use of white mice experimentally infested with larvae of a rodent bot fly for screening systemic insecticides. J. Econ. Entomol. 65: 742-745.

(21) Graham, O. H. 1960. Techniques for evaluating systemic insecticides against livestock insects. In Shepard, H. H. (ed.)., Methods of Testing Chemicals on Insects, vol. 2, pp. 200-216. Burgess Publishing Co., Minneapolis, Minn.

(22) McGregor, W. S., and Bushland, R. C. 1956. Research on the use of systemic insecticides for the control of livestock pests. J. Econ. Entomol. 49: 86-88.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)-- Lethal to guinea pigs	Causing 100 percent kill of-- Larvae of-- Secondary screwworms	Black blow flies	Adult stable flies	Nymphal lone star ticks
1	70322	Acetamide, N-butyl-N-1-cyclohexen-1-yl-	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
2	28966	Acetamide, N-butyl-N-(3,7-dimethyl-1,6-octadienyl)-	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
3	28968	Acetamide, N-butyl-N-(2-ethyl-1-hexenyl)-	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
4	28969	Acetamide, N-butyl-N-p-menth-3-en-3-yl-	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
5	28967	Acetamide, N-cyclohexyl-N-(3,7-dimethyl-1,6-octadienyl)-	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
6	70141	Acetamide, N-cyclohexyl-N-(2-ethyl-1-hexenyl)-	100 O.	N	I	I	I	I
			100 Sc.	100	I	I	I	I
7	16742	Acetamide, N-cyclohexyl-N-(2-ethylhexyl)-	100 O.	N	I	I	I	I
			100 Sc.	100	I	I	I	I
8	28970	Acetamide, N-cyclohexyl-N-(2-methylpropenyl)-	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
9	27722	Acetic acid, bis(p-bromophenyl)hydroperoxy-, isopropyl ester	100 O.	100	I	I	I	I
			100 Sc.	100	I	I	I	I

10	27721	Acetic acid, bis(p-chlorophenyl)hydroperoxy-, isopropyl ester	100 100	O. Sc.	100 100	I I	I I	I I	I I
11	27835	Acetic acid, mercapto-, 2-carboxy-2-methylhydrazide, methyl ester, S-ester with O,O-dimethyl phosphorothioate	100 100	O. Sc.	N 100	25 100	25 100	100 50	25 25
12	27814	Acetic acid, mercapto-, 2-(2-cyanopropyl)-2-methylhydrazide, S-ester with O,O-dimethyl phosphorothioate	100 100	O. Sc.	50 50	50 100	100 100	I I	25 50
13	27509	Acetic acid, mercapto-, 2,2-dimethylhydrazide, O-ethyl ethylphosphonodithioate (ester)	50 50	O. Sc.	5 5	10 25	10 50	I I	10 I
14	27797	Acetic acid, phenyl-, 5-chloro-2-(dimethylamino)-alpha-o-tolylbenzyl ester	100 100	O. Sc.	100 N	I I	I I	I I	I I
15	27411	Acetimidic acid, N-(carbamoyloxy)thio-, methyl ester	100 100	O. Sc.	25 25	I I	I I	I I	I I
16	27977	Acetimidic acid, N-methoxy-2-thio-, methyl ester, S-ester with O-ethyl= isopropylphosphoramidothioate	25 25	O. Sc.	25 5	I 25	I 25	I I	I 25
17	27978	Acetimidic acid, N-methoxy-2-thio-, methyl ester, S-ester with O-methyl isopropylphosphoramidothioate	25 25	O. Sc.	25 10	10 25	I 25	I I	I 25
18	27519	Acetimidic acid, N-[(methylcarbamoyl)oxy]thio-, ester with mercaptoacetonitrile	25 25	O. Sc.	10 5	I I	I I	I I	I I
19	27613	Acetimidic acid, N-[(methylcarbamoyl)oxy]thio-, ester with 3-mercaptopropionitrile	100 100	O. Sc.	25 5	I I	I I	I I	I I
20	27323	Acetimidoyl chloride, 2,2,2-trichloro-N-(pentachlorophenyl)-	100 100	O. Sc.	N 25	I I	I I	I I	I I
21	27905	Allophanic acid, 4,4'-o-phenylenebis[3-thio-], dimethyl ester	100 100	O. Sc.	N N	I I	I I	I I	I I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)-- Causing 100 percent kill of--			
				Lethal to guinea pigs	Larvae of-- Secondary screwworms	Black blow flies	Adult stable flies	Nymphal lone star ticks
22	28012-X	Ammonium, dialkyldimethyl---salicylate	100 O.	N	I	I	I	I
			100 Sc.	100	I	I	I	I
23	28019-X	Ammonium, dialkyldimethyl---salt with 2',4'-dihydroxybenzophenone	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
24	28020-X	Ammonium, dialkyldimethyl---salt with 2,2',4,4'-tetrahydroxybenzophenone	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
25	27793	m-Anisic acid, 5-chloro-2-(dimethylamino)-alpha-phenylbenzyl ester	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
26	27780	m-Anisic acid, 5-chloro-2-(dimethylamino)-alpha-o-tolylbenzyl ester	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
27	27792	o-Anisic acid, 5-chloro-2-(dimethylamino)-alpha-phenylbenzyl ester	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
28	27778	p-Anisic acid, 5-chloro-2-(dimethylamino)-alpha-o-tolylbenzyl ester	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
29	27546	o-Anisimidic acid, 3,6-dichloro-N-ethoxy-, anhydride with benzoic acid	100 O.	N	I	I	I	I
			100 Sc.	100	I	I	I	I
30	27545	o-Anisimidic acid, 3,6-dichloro-N-ethoxy-, anhydride with p-toluic acid	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I

31	70081	Anisole, 3-methyl-4-(methylthio)-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
32	70080	Anisole, 4-(methylthio)-	100	O.	N	--	I	I	I
			100	Sc.	N	--	I	I	I
33	27770	Benzamide, N-acetyl-3-chloro-N,2,6-trimethoxy-	100	O.	N	I	I	I	I
			100	Sc.	100	I	I	I	I
34	27633	Benzamide, N-butyl-m-[[(dichlorofluoromethyl)-thio](trifluoromethyl)amino]-	100	O.	100	I	I	I	I
			100	Sc.	50	I	I	I	I
35	28962	Benzamide, N-butyl-N-(3,7-dimethyl-1,6-octadienyl)-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
36	28973	Benzamide, N-butyl-N-p-menth-3-en-3-yl-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
37	28972	Benzamide, N-butyl-N-(2-methylpropenyl)-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
38	70085	Benzamide, o-chloro-N,N-dipentyl-	100	O.	N	--	I	I	I
			100	Sc.	N	--	I	I	I
39	28971	Benzamide, N-cyclohexyl-N-(2-methylpropenyl)-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
40	70086	Benzamide, N,N-dipentyl-	100	O.	N	I	I	I	I
			100	Sc.	100	I	I	I	I
41	27947	Benzene, p-bis(2-propynyloxy)-	100	O.	N	I	I	I	I
			100	Sc.	100	I	I	I	I
42	70078	Benzene, 1-chloro-2,4-dimethoxy-	100	O.	100	I	I	I	I
			100	Sc.	100	I	I	I	I
43	70082	Benzene, 2,4-dimethoxy-1-propyl-	100	O.	N	--	I	I	I
			100	Sc.	N	--	I	I	I
44	24864	Benzenesulfonamide, 2,5-dichloro-N,N-diethyl-	100	O.	100	I	I	I	I
			100	Sc.	100	I	I	I	I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)-- Causing 100 percent kill of-- Larvae of-- Lethal to guinea pigs	Secondary screwworms	Black blow flies	Adult stable flies	Nymphal lone star ticks
45	27786	Benzhydrol, 5-chloro-2-(dimethylamino)-, benzoate (ester)	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
46	27771	Benzhydrol, 5-chloro-2-(dimethylamino)-2'-methyl-, benzoate (ester)	100 O.	100	I	I	I	I
			100 Sc.	N	I	I	I	I
47	27605	Benzilic acid, 4,4'-dibromo-, ethyl ester	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
48	29049	Benzimidazole, 2-(chlorodifluoromethyl)-4-nitro-6-(trifluoromethyl)-	100 O.	25	10	10	[3]10	10
			100 Sc.	25	1	1	[3]10	10
49	29055	1-Benzimidazolecarboxylic acid, 4,6-diiodo-2-(trifluoromethyl)-, isopropyl ester	100 O.	50	I	I	I	I
			100 Sc.	100	I	I	I	I
50	27953	1-Benzimidazolecarboxylic acid, 4-nitro-2,6-bis(trifluoromethyl)-, isopropyl ester	100 O.	25	5	5	5	5
			100 Sc.	25	5	5	10	5
51	29048	1-Benzimidazolecarboxylic acid, 4-nitro-2,6-bis(trifluoromethyl)-, phenyl ester	100 O.	25	5	5	5	5
			100 Sc.	10	5	10	25	2.5
52	29010	Benzimidic acid, N-ethoxy-, O-anhydride with O,O-diethyl phosphorothioate	100 O.	25	25	25	50	I
			100 Sc.	50	5	25	I	I
53	27776	Benzoic acid, m-chloro-, 5-chloro-2-(dimethylamino)-alpha-o-tolybenzyl ester	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I

54	27787	Benzoic acid, o-chloro-, 5-chloro-2-(dimethylamino)-alpha-phenylbenzyl ester	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
55	27774	Benzoic acid, p-chloro-, 5 chloro-2-(dimethylamino)-alpha-o-tolylbenzyl ester	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
56	27497	Benzoic acid, m-(cyano-N-hydroxyformimidoyl)-, methyl ester, diethyl phosphate	100	O.	10	I	I	I	I
			100	Sc.	10	I	I	I	I
57	29033	Benzoic acid, m-(cyano-N-hydroxyformimidoyl)-, methyl ester, O-ester with O,O-diethyl phosphorothioate	100	O.	100	I	I	I	I
			100	Sc.	100	I	I	I	I
58	70349	Benzoic acid, p-[(1,5-dimethylhexyl)oxy]-, methyl ester	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
59	27850	Benzonitrile, 4-hydroxy-2-isopropyl-, methanesulfonate	100	O.	100	I	I	I	25
			100	Sc.	100	I	I	I	25
60	27906	Benzothiazole, 2-(methylsulfonyl)-6-nitro-	100	O.	100	I	I	I	I
			100	Sc.	N	I	I	I	I
61	27645	Benzoyl chloride, phenylhydrazone	100	O.	100	I	I	I	I
			100	Sc.	100	I	I	I	I
62	27646	Benzoyl chloride, (2,4,6-trichlorophenyl)-hydrazone	100	O.	50	I	I	I	I
			100	Sc.	N	I	I	I	I
63	27349	3-Biphenylcarboxy-o-toluidide, 4',5-dichloro-4''-fluoro-2-hydroxy-	100	O.	N	I	I	I	I
			100	Sc.	50	I	I	I	I
64	27851	2-Butanone, 3,3-dimethyl-1-(methylthio)-, O-(methylcarbamoyl)oxime	10	O.	10	I	I	I	I
			10	Sc.	10	I	I	I	10
65	23122	3-Buten-2-ol, 2-methyl-	100	O.	N	[4]I		I	I
			100	Sc.	N	[4]I		I	I
66	27215	Butyric acid, 2-chloro-, 2-sec-butyl-4,6-dinitrophenyl ester	100	O.	25	I	I	I	I
			100	Sc.	50	I	I	I	I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)-- Lethal to guinea pigs	Causing 100 percent kill of-- Larvae of-- Secondary screwworms	Black blow flies	Adult stable flies	Nymphal lone star ticks
67	27968-X	Carbamic acid, acetylmethyl-, m-cumenyl ester (60 percent), mixture with p-cumenyl acetylmethylcarbamate (40 percent)	100 O. 100 Sc.	50 50	I I	I I	I I	I I
68	27468	Carbamic acid, acetylmethyl-, 2,3-dihydro-2,2-dimethyl-7-benzofuranyl ester	100 O. 100 Sc.	25 5	I I	I I	I I	I I
69	27457	Carbamic acid, (chloroacetyl)methyl-, m-tert-butylphenyl ester	100 O. 100 Sc.	100 50	I I	I I	I I	I I
70	27334	Carbamic acid, (chloroacetyl)methyl-, m-cumenyl ester	100 O. 100 Sc.	50 25	I I	I I	I I	I I
71	27750	Carbamic acid, (chloroacetyl)methyl-, 4-(dimethylamino)-3,5-xylyl ester	100 O. 100 Sc.	50 50	I I	I I	I I	50 50
72	27456	Carbamic acid, (chloroacetyl)methyl-, m-tolyl ester	100 O. 100 Sc.	N N	I I	I I	I I	I I
73	27783	Carbamic acid, (3-chloro-2,6-dimethoxybenzoyl)-methoxy-, ethyl ester	100 O. 100 Sc.	100 100	I I	I I	I I	I I
74	27790	Carbamic acid, (3-chloro-2,6-dimethoxybenzoyl)-methoxy-, isopropyl ester	100 O. 100 Sc.	N N	I I	I I	I I	I I
75	27459	Carbamic acid, (dichloroacetyl)methyl-, m-tert-butylphenyl ester	100 O. 100 Sc.	100 100	I I	I I	I I	I I

76	27455	Carbamic acid, (dichloroacetyl)methyl-, m-cumenyl ester	100 100	O. Sc.	25 10	I I	I I	I I	I I
77	27772	Carbamic acid, (3,6-dichloro-o-anisoyl)-methoxy-, ethyl ester	100 100	O. Sc.	N 50	I I	I I	I I	I I
78	27775	Carbamic acid, (3,6-dichloro-o-anisoyl)-methoxythio-, S-ethyl ester	100 100	O. Sc.	N 100	I I	I I	I I	I I
79	27981	Carbamic acid, [(dichlorofluoromethyl)thio]-methyl-, o-isopropoxyphenyl ester	100 100	O. Sc.	100 50	I I	I I	I I	I I
80	29036	Carbamic acid, dimethyl-, 4-sec-butyl-2-methyl-5-thiazolyl ester	100 100	O. Sc.	50 25	I I	I I	I I	I I
81	27624	Carbamic acid, dimethyl-, o-1,3-dithiolan-2-ylphenyl ester	100 100	O. Sc.	25 5	I I	I I	I I	I I
82	27734-X	Carbamic acid, dimethyl-, 5-quinolyl ester,	50 50	O. Sc.	50 5	I I	I I	I I	I I
83	70053	Carbamic acid, dimethyl-, 2,3,4,6-tetrachlorophenyl ester	100 100	O. Sc.	N N	I I	I I	I I	I I
84	25955	Carbamic acid, hydroxy-, m-cumenyl ester	100 100	O. Sc.	25 10	I I	I I	I I	I I
85	27706	Carbamic acid, (mercaptoacetyl)methyl-, p-tert-butylphenyl ester, S-ester with O,O-dimethyl phosphorodithioate	100 100	O. Sc.	N N	50 I	50 I	50 I	I I
86	27348	Carbamic acid, (mercaptoacetyl)methyl-, m-cumenyl ester, S-ester with O,O-dimethyl phosphorodithioate	100 100	O. Sc.	100 10	25 I	50 I	25 I	I I
87	27955	Carbamic acid, (mercaptoacetyl)methyl-, O-ester with methyl p-hydroxybenzoate, S-ester with O,O-dimethyl phosphorothioate	100 100	O. Sc.	N N	25 25	25 50	50 50	100 I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration		Lowest dosage (mg/kg)-- Causing 100 percent kill of--				
					Lethal to guinea pigs	Larvae of-- Secondary screwworms	Larvae of-- Black blow flies	Adult stable flies	Nymphal lone star ticks
88	27723	Carbamic acid, (mercaptoacetyl)methyl-, methyl ester, S-ester with O-methyl	100	O.	25	50	25	I	100
			100	Sc.	50	50	50	I	100
89	27954	Carbamic acid, (mercaptoacetyl)methyl-, phenyl ester, S-ester with O,O-dimethyl phosphorodithioate	100	O.	N	25	25	50	100
			100	Sc.	100	10	100	100	100
90	27460	Carbamic acid, (mercaptoacetyl)methyl-, o-tolyl ester, S-ester with O,O-dimethyl phosphorodithioate	100	O.	N	25	25	25	I
			100	Sc.	100	I	I	100	I
91	27362	Carbamic acid, methyl-, 1,4-benzodioxan-5-yl ester	100	O.	N	I	I	100	I
			100	Sc.	100	I	I	100	I
92	27475	Carbamic acid, methyl-, 3-sec-butyl-p-tolyl ester	100	O.	5	I	I	I	I
			100	Sc.	51	I	I	I	I
93	27649	Carbamic acid, methyl-, 2-chloro-m-tolyl ester	100	O.	50	I	I	I	I
			100	Sc.	50	I	I	I	I
94	29035	Carbamic acid, methyl-, 3,5-di-tert-butyl-4-hydroxyphenyl ester	100	O.	N	I	I	I	I
			100	Sc.	100	100	I	I	I
95	27984-X	Carbamic acid, methyl-, 3,5-diethylphenyl ester	100	O.	100	I	100	100	I
			100	Sc.	100	100	100	100	100

96	27486	Carbamic acid, methyl-, 4-[(dimethylamino)-methyl]-2,3-dimethylphenyl ester	100 100	O. Sc.	25 2.5	I I	I I	I I	I I
97	27305	Carbamic acid, methyl-, 4-[[(dimethylamino)-methylene]amino]-m-tolyl ester	10 10	O. Sc.	10 5	I I	I I	I I	I I
98	27907	Carbamic acid, methyl-, 4,5-dimethylbenzo-[b]thien-7-yl ester	100 100	O. Sc.	N 50	I I	I I	I I	I I
99	27524	Carbamic acid, methyl-, 1,1-dimethyl-4-indanyl ester	100 100	O. Sc.	50 50	I I	I I	I I	I I
100	27389	Carbamic acid, methyl-, o-1,3-dioxolan-2-ylphenyl ester	100 100	O. Sc.	N 25	I I	I I	I I	I I
101	27703	Carbamic acid, methyl-, 4-(di-2-propynylamino)-m-tolyl ester	100 100	O. Sc.	50 25	I I	I I	I I	I I
102	27702	Carbamic acid, methyl-, 4-(di-2-propynylamino)-3,5-xylyl ester	100 100	O. Sc.	10 25	I I	I I	I I	I I
103	27388	Carbamic acid, methyl-, o-1,3-dithiolan-2-ylphenyl ester	100 100	O. Sc.	25 N	I I	I I	I I	I I
104	27638	Carbamic acid, methyl-, ester with 3-chloro-3'-hydroxypropionalide	100 100	O. Sc.	N 100	I I	I I	50 [1]100	I I
105	27480	Carbamic acid, methyl-, ester with 4'-hydroxyacetanilide	100 100	O. Sc.	50 50	[6]10 [6]10	10 50	[7] 25 25	I I
106	27640	Carbamic acid, methyl-, ester with 3'-hydroxy-3-butenanilide	100 100	O. Sc.	N 100	I I	I I	50 [1]100	I I
107	27637	Carbamic acid, methyl-, ester with 3'-hydroxybutyranilide	100 100	O. Sc.	N 100	I I	I I	50 100	I I
108	27630	Carbamic acid, methyl-, ester with 3'-hydroxycyclopropanecarboxanilide	100 100	O. Sc.	N N	100 I	50 I	25 I	I I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)-- Lethal to guinea pigs	Causing 100 percent kill of-- Larvae of-- Secondary screwworms	Black blow flies	Adult stable flies	Nymphal lone star ticks
109	27639	Carbamic acid, methyl-, ester with 3'-hydroxyformanilide	100 O.	N	I	I	50	I
			100 Sc.	25	I	I	50	I
110	27397	Carbamic acid, methyl-, ester with (p-hydroxyphenyl)acetonitrile	100 O.	50	I	I	I	I
			100 Sc.	100	I	I	100	I
111	27727	Carbamic acid, methyl-, ester with 1-(m-hydroxyphenyl)-2-pyrrolidinone	100 O.	N	I	I	100	I
			100 Sc.	100	[6]50	I	100	I
112	27481	Carbamic acid, methyl-, ester with 3'-hydroxypropionanilide	100 O.	N	50	50	25	I
			100 Sc.	50	50	50	25	I
113	27657	Carbamic acid, methyl-, ester with 2,2,2-trifluoro-4'-hydroxyacetanilide	100 O.	100	I	I	I	I
			100 Sc.	50	25	50	50	50
114	29007	Carbamic acid, methyl-, alpha-(ethylthio)-o-tolyl ester	100 O.	50	I	I	I	100
			100 Sc.	50	I	I	I	100
115	27695	Carbamic acid, methyl-, 2,3-(isopropylidenedioxy)phenyl ester	100 O.	10	I	I	I	I
			100 Sc.	10	I	I	I	I
116	25918	Carbamic acid, methyl-, o-(methoxymethoxy)-phenyl ester	100 O.	N	I	I	50	I
			100 Sc.	100	I	I	25	I
117	27384	Carbamic acid, methyl-, 7-methylbenzo[b]-thien-4-yl ester	100 O.	N	I	I	I	I
			100 Sc.	50	I	I	I	I

118	27701	Carbamic acid, methyl-, o-[methyl(2-propynyl)-amino]phenyl ester	100	O.	25	I	I	I	I
			100	Sc.	10	I	I	10	I
119	27969	Carbamic acid, methyl-, 4-[methyl(2-propynyl)-amino]-3,5-xylyl ester	100	O.	25	50	I	I	I
			100	Sc.	25	50	I	50	I
120	27173	Carbamic acid, methyl-, o-[3-(methylthio)propyl]-phenyl ester	100	O.	100	I	I	I	100
			100	Sc.	100	I	I	[1]100	100
121	27917	Carbamic acid, methyl-, 2-(methylthio)-3-pyridyl ester	50	O.	25	I	I	I	I
			50	Sc.	50	I	I	I	I
122	27347	Carbamic acid, methylnitroso-, m-cumenyl ester	100	O.	100	I	I	I	I
			100	Sc.	100	I	I	I	I
123	27704-X	Carbamic acid, methyl(phenylthio)-, m-sec-butylphenyl ester (approximately 58%), mixture with p- and o-isomers (29% and 5%, respectively)	100	O.	10	I	I	I	I
			100	Sc.	10	I	I	I	I
124	27975-X	Carbamic acid, methylpropionyl-, m-cumenyl ester (60%) mixture with p-cumenyl ester (40%)	100	O.	50	I	I	I	I
			100	Sc.	25	I	I	I	I
125	27458	Carbamic acid, methyl(trichloroacetyl)-, m-tert-butylphenyl ester	100	O.	50	I	I	I	I
			100	Sc.	100	I	I	I	I
126	27454	Carbamic acid, methyl(trichloroacetyl)-, m-cumenyl ester	100	O.	25	I	I	I	I
			100	Sc.	25	I	I	I	I
127	27982	Carbamic acid, methyl[(trichloromethyl)thio]-o-isopropoxyphenyl ester	100	O.	100	I	I	I	I
			100	Sc.	50	I	I	[1]100	I
128	27573	Carbamic acid, thio-, S,S'-2-(dimethylamino)-trimethylene ester, hydrochloride	100	O.	50	I	I	I	I
			100	Sc.	25	I	I	I	I
129	27636	Carbanilic acid, p-chloro-, 2-butynyl ester	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)-- Lethal to guinea pigs	Causing 100 percent kill of-- Larvae of-- Secondary screwworms	Black blow flies	Adult stable flies	Nymphal lone star ticks
130	27995	Carbanilic acid, p-chloro-, 1-methyl-2-propynyl ester	100 O.	N	I	I	I	I
			100 Sc.	100	I	I	I	I
131	27996	Carbanilic acid, 3,4-dichloro-, 1-methyl-2-propynyl ester	100 O.	N	I	I	I	I
			100 Sc.	100	I	I	I	I
132	27942	Carbanilic acid, o-methoxy-, thymyl ester	100 O.	N	I	I	I	I
			100 Sc.	100	I	I	I	I
133	27432	Carbanilide, 3-chloro-4-(p-chlorophenoxy)-4'-nitro	100 O.	100	I	I	I	I
			100 Sc.	100	$^{6}50$	$^{6}50$	I	I
134	27440	Carbanilide, N,N'-diethyl-4,4'-dinitro	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
135	27441	Carbanilide, N,N'-dimethyl-4,4'-dinitro-	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
136	27244	Carbonic acid, 2-sec-butyl-4,6-dinitrophenyl isopropyl ester	100 O.	50	I	I	I	I
			100 Sc.	50	I	I	I	I
137	29011	Carbonic acid, 2-tert-butyl-4,6-dinitrophenyl 2-fluoroethyl ester	100 O.	$^{5}1$	I	I	I	I
			100 Sc.	2.5	I	I	I	I
138	70052	Carbonic acid, dithio-, O-butyl S-(p-nitrophenacyl) ester	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I

139	25935	Carbonic acid, dithio-, O-ethyl S-(p-nitrophenacyl)ester	100	0.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
140	70054	Carbonic acid, dithio-, S-(p-nitrophenacyl) O-propyl ester	100	0.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
141	27856	Carbonimidodithioic acid, cyano-, (diethoxyphosphinothioyl)methyl 2-propenyl ester	100	0.	100	I	I	I	I
			100	Sc.	100	I	I	I	I
142	27976	Carbonimidothioic acid, [methylcarbamoyl)oxy]-, dimethyl ester	100	0.	100	I	I	I	[1]100
			100	Sc.	100	100	I	I	[1]100
143	27795	Cinnamic acid, 5-chloro-2-(dimethylamino)-α-phenylbenzyl ester	100	0.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
144	27740	Crotonic acid, 4-bromo-3-hydroxy-, methyl ester, dimethyl phosphate	100	0.	50	I	I	I	I
			100	Sc.	5	I	I	I	I
145	27941	Crotonic acid, 3-hydroxy-, ester with methyl lactate, dimethyl phosphate	100	0.	N	I	I	I	I
			100	Sc.	50	I	I	I	I
146	27756	Crotonic acid, 3-hydroxy-, ethyl ester, methyl propylphosphoramidate, (E)-	100	0.	10	100	100	I	[6]100
			100	Sc.	5	100	100	I	[6]25
147	27754	Crotonic acid, 3-hydroxy-, 1-ethyl-1-methyl-2-propynyl ester, dimethyl phosphate	100	0.	N	I	I	I	I
			100	Sc.	100	I	I	I	I
148	27989	Crotonic acid, 3-hydroxy-, isopropyl ester, O-ester with O-methyl ethylphosphoramidothioate	100	0.	25	50	25	I	I
			100	Sc.	100	50	50	I	I
149	27753	Crotonic acid, 3-hydroxy-, isopropyl ester, methyl propylphosphoramidate, (E)-	100	0.	100	I	I	I	I
			100	Sc.	5	I	I	I	I
150	27752	Crotonic acid, 3-hydroxy-, 2-methoxy-1-methylethyl ester, dimethyl phosphate	100	0.	25	I	I	I	I
			100	Sc.	10	I	I	I	100
151	27993	Crotonic acid, 3-hydroxy-, methyl ester, S-sec-butyl ethylphosphonodithioate, (Z)-	50	0.	5	I	I	I	I
			50	Sc.	50	I	I	I	I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration		Lowest dosage (mg/kg)-- Causing 100 percent kill of--			
					Lethal to guinea pigs	Larvae of-- Secondary screwworms	Larvae of-- Black blow flies	Adult stable flies	Nymphal lone star ticks
152	27945	Crotonic acid, 3-hydroxy-, methyl ester, O-ester with S-ethyl ethylphosphonodithioate	50	O.	25	I	I	I	I
			50	Sc.	25	I	I	I	I
153	27755	Crotonic acid, 3-hydroxy-, methyl ester, methyl ethylphosphoramidate, (E)-	100	O.	10	50	50	I	25
			100	Sc.	5	25	25	I	25
154	27483	Crotonic acid, 3-hydroxy-, α-methyl-p-methylsulfonyl)benzyl ester, dimethyl phosphate	100	O.	100	I	I	I	I
			100	Sc.	50	I	I	I	I
155	27451	Crotonic acid, 3-hydroxy-, α-methyl-p-(methylthio)-benzyl ester, dimethyl phosphate	100	O.	N	I	I	I	I
			100	Sc.	25	I	I	I	I
156	27429	Crotonic acid, thio-, S-phenyl ester	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
157	25954	1,5,9-Cyclododecatriene, compound with O,O-diethyl phosphorodithioate (1:2)	100	O.	N	I	I	I	I
			100	Sc.	100	I	I	I	I
158	27791	Cyclohexanecarboxylic acid, 5-chloro-2-(dimethylamino)-α-phenylbenzyl ester	100	O.	N	I	I	I	I
			100	Sc.	100	I	I	I	I
159	27782	Cyclohexanecarboxylic acid, 5-chloro-2-(dimethylamino)-α-o-tolylbenzyl ester	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I

160	70087	Cyclohexanecarboxylic acid, 2-hydroxyethyl ester	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
161	27540	1,2-Cyclohexanediol, 1,2-dimethyl-, cyclic sulfite	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
162	27304	Cyclohexanone, 2-methyl-2-nitro, O-(methylcarbamoyl)oxime	100	O.	25	I	I	I	I
			100	Sc.	10	I	I	I	I
163	27462	1-Cyclopentene-1-carboxylic acid, 2-hydroxy-, methyl ester, dimethyl phosphate	100	O.	N	I	I	I	I
			100	Sc.	100	1_{100}	1_{100}	1_{100}	1_{100}
164	27391	Cyclopropane, 1,1-dichloro-2,2-bis(p-ethoxyphenyl)-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
165	27985	Cyclopropanecarboxylic acid, 3-(cyclopentylidenemethyl)-2,2-dimethyl-, (5-benzyl-3-furyl)methyl ester, trans-(+)-	100	O.	25	I	I	I	I
			100	Sc.	25	I	I	I	I
166	27987	Cyclopropanecarboxylic acid, 2,2-dimethyl-3-(2-methylpropenyl)-, (5-benzyl-3-furyl)methyl ester, cis-(+)-	100	O.	50	I	I	I	I
			100	Sc.	100	50	I	I	I
167	27474	Cyclopropanecarboxylic acid, 2,2-dimethyl-3-(2-methylpropenyl)-, (5-benzyl-3-furyl)methyl ester, cis,trans-(±)-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
168	27662	Cyclopropanecarboxylic acid, 2,2-dimethyl-3-(2-methylpropenyl)-, (5-benzyl-3-furyl)methyl ester, trans-(+)-	100	O.	100	I	I	I	I
			100	Sc.	N	50	I	I	I
169	27809	Cyclopropanecarboxylic acid, 2,2-dimethyl-3-(2-methylpropenyl)-, 2,3-dihydro-3-benzofuranyl ester, cis,trans-(±)-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
170	27944	Cyclopropanecarboxylic acid, 2,2-dimethyl-3-(2-methylpropenyl)-, 2,4-dimethylbenzyl ester, trans-(-)-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
171	27958	Cyclopropanecarboxylic acid, 2,2,3,3-tetramethyl-, 4-phenoxy-2-butynyl ester	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)-- Causing 100 percent kill of--			
				Lethal to guinea pigs	Larvae of-- Secondary screwworms	Larvae of-- Black blow flies	Adult stable flies	Nymphal lone star ticks
172	27532	Decylamine, N,N-diethyl-	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
173	27531	Decylamine, N,N-dimethyl-	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
174	27530	Decylamine, N-methyl-	100 O.	100	I	I	I	I
			100 Sc.	100	I	I	I	I
175	27784	Dibenzamide, 3-chloro-N,2,6-trimethoxy-	100 O.	N	I	I	I	I
			100 Sc.	100	I	I	I	I
176	70181	Di-2,6-octadienylamine, N-[2-[2-(diethylamino)ethoxy]-1,1-dimethylethyl]-3,3',7,7'-tetramethyl-, (E,E)-	100 O.	N	I	I	I	I
			100 Sc.	100	I	I	I	I
177	70283	Di-2,6-octadienylamine, N-[2-[2-(diethylamino)ethoxy]propyl]-3,3',7,7'-tetramethyl-	100 O.	N	I	I	I	I
			100 Sc.	100	I	I	I	I
178	29006	1,3,2-Dioxaphosphorinane, 2-chloro-5,5-diethyl-, 2-sulfide	100 O.	N	100	100	I	I
			100 Sc.	N	50	100	I	I
179	29104	4H-1,3,2-Dioxaphosphorino[5,4-b]pyridine, 2-methoxy-6-methyl-, 2-sulfide	100 O.	100	50	50	I	I
			100 Sc.	50	50	50	I	50

180	27738	Distannoxane, hexakis (β,β-dimethylphenethyl)-	100	O.	100	I	I	I	I
			100	Sc.	5	I	I	I	I
181	27810	1,4-Dithiepan-6-one, N-[(methylcarbamoyl)oxy]oxime	100	O.	25	I	I	I	50
			100	Sc.	25	I	I	I	25
182	27949	1,3-Dithiolane-2-carbonyl chloride, 2-methyl-, (6-chloro-α,α,α-trifluoro-m-tolyl)hydrazone	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
183	27660	1,3-Dithiolane-2-carboxaldehyde, 2-methyl-,O-(methylcarbamoyl)oxime	10	O.	10	I	I	I	I
			10	Sc.	5	I	I	I	I
184	70350	2,6-Dodecadienoic acid, 10,11-epoxy-3,7,10,11-tetramethyl-, ethyl ester	100	O.	50	I	I	I	I
			100	Sc.	N	I	I	I	I
185	70348	2-Dodecenoic acid, 7,11-dichloro-3,7,11-trimethyl-, ethyl ester, (E)-	100	O.	N	I	I	I	I
			100	Sc.	100	I	I	I	I
186	27915	Ethanesulfonic acid, ester with 4-hydroxy-2-isopropylbenzonitrile	100	O.	N	I	I	I	[1]100
			100	Sc.	100	I	I	I	100
187	70083	Ethanol, 2,2'-(m-phenylenedioxy)di-	100	O.	N	--	I	I	I
			100	Sc.	N	--	I	I	I
188	27728	Ethenesulfinic acid, 2,2-dichlorothio-, anhydrosulfide with O,O-dimethyl phosphorothioate	100	O.	50	100	50	I	100
			100	Sc.	25	I	I	I	I
189	70088	Flavan, 2',4',7-trimethoxy-2,4,4-trimethyl-	100	O.	N	I	I	I	I
			100	Sc.	100	I	I	I	I
190	29005	Formamidine, N'-(4-chloro-o-tolyl)-N-methyl-N-[(methylthio)methyl]-, hydrochloride	100	O.	50	I	I	I	I
			100	Sc.	100	I	I	I	I
191	29046	Formimidic acid, N-[methoxy(methylthio)phosphinyl]-, ethyl ester	100	O.	50	25	25	10	50
			100	Sc.	25	10	25	25	I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration		Lowest dosage (mg/kg)-- Causing 100 percent kill of-- Larvae of-- Lethal to guinea pigs	Secondary screwworms	Black blow flies	Adult stable flies	Nymphal lone star ticks
192	27871	Glyoxylic acid, cyano-, methyl ester, (α,α,α,α',α',α'-hexafluoro-3,5-xylyl)hydrazone	100	O.	N	I	I	I	I
			100	Sc.	50	I	I	I	I
193	70056	Hexanediamide, N,N,N',N'-tetraethyl-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
194	27431	Imidazole-1-carboxanilide, 2-methyl-4'-nitro-	100	O.	N	100	100	I	I
			100	Sc.	N	I	I	I	I
195	70150	Isothiocyanic acid, phthalimidomethyl ester	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
196	27781	Isovaleric acid, 5-chloro-2-(dimethylamino)-α-o-tolylbenzyl ester	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
197	70059	Lauric acid, diester with N,N-bis(2-hydroxyethyl)dodecanamide	100	O.	50	I	I	I	I
			100	Sc.	50	I	I	I	I
198	61979	Maleimide, N-(hydroxymethyl)-	100	O.	50	I	I	I	I
			100	Sc.	100	I	I	I	I
199	27910	Malononitrile, (3,5-di-tert-butyl-4-hydroxybenzylidene)-	100	O.	10	I	I	I	I
			100	Sc.	10	I	I	I	I
200	27909	Malononitrile, (3,5-di-tert-butyl-4-hydroxybenzylidene)-, carbanilate (ester)	100	O.	10	I	I	I	I
			100	Sc.	10	I	I	I	I

201	27824	Malononitrile, [(N-ethyl-α,α,α,α',α',α'-hexafluoro-3,5-xylidino)methylene]-	100	O.	25	I	I	I	I
			100	Sc.	50	I	I	I	I
202	27538	p-Menthan-2-one	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
203	27539	p-Menth-8-ene-1,2-diol, cyclic sulfite	100	O.	N	I	I	I	I
			100	Sc.	100	I	I	I	I
204	27537	p-Menth-3-en-2-one	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
205	27846	Methanesulfonamide, 1-chloro-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
206	27236	4,7-Methanoisobenzofuran-5(3H)-one, 1,3,4,6,7,8,8-heptachlorohexahydro-	100	O.	2.5	I	I	I	I
			100	Sc.	5	I	I	I	I
207	27237	4,7-Methanoisobenzofuran-5(3H)-one, 1(or 3),4,6,7,8,8-hexachlorohexahydro-	100	O.	50	I	I	I	I
			100	Sc.	50	I	I	I	I
208	70057	Nonanediamide, N,N,N',N'-tetraethyl-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
209	27301	2-Norbornanone, 3-methyl-3-nitro-, O-(methylcarbamoyl)oxime	50	O.	10	I	I	I	I
			50	Sc.	25	I	I	I	I
210	27048	5-Norbornene-2,3-dimethanol, 1,4,5,6,7,7-hexachloro-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
211	70035	9-Octadecenamide, N,N-diethyl-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
212	70484-X	Octanamide, N,N-diethyl-, compound with butoxy polypropylene glycol	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
213	70058	Octanoic acid, diester with N,N-bis(2-hydroxyethyl)octanamide	100	O.	100	I	I	I	I
			100	Sc.	100	I	I	I	I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration		Lowest dosage (mg/kg)-- Lethal to guinea pigs	Causing 100 percent kill of-- Larvae of-- Secondary screwworms	Black blow flies	Adult stable flies	Nymphal lone star ticks
214	70351	2-Octene, 6,7-epoxy-3,7-dimethyl-1-(2-propynyloxy)-	100	O.	100	I	I	I	I
			100	Sc.	100	I	I	I	I
215	28930	1-Oxa-4-azaspiro[4.5]decane, 4-acetyl-3-ethyl-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
216	28876	1-Oxa-4-azaspiro[4.5]decane, 4-benzoyl-	100	O.	N	I	I	I	I
			100	Sc.	100	I	I	I	I
217	27918	1,2,4-Oxadiazole, 5-amino-3-[2-(5-nitro-2-furyl)-vinyl]-, (E)-	100	O.	N	I	--	I	I
			100	Sc.	N	I	--	I	I
218	28953	2H-1,3-Oxazine, 3-acetyl-2-(2,6-dimethyl-5-heptenyl)tetrahydro-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
219	28951	2H-1,3-Oxazine, 3-acetyl-2-(1-ethylpentyl) tetrahydro-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
220	28949	2H-1,3-Oxazine, 3-acetyltetrahydro-2-isopropyl-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
221	28877	2H-1,3-Oxazine, 3-acetyltetrahydro-2-phenyl-	100	O.	50	I	I	I	I
			100	Sc.	N	I	I	I	I
222	28964	2H-1,3-Oxazine, 3-acetyltetrahydro-2-(2-thienyl)-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I

223	28954	2H-1,3-Oxazine, 3-benzoyl-2-(2,6-dimethyl-5-heptenyl)tetrahydro-	100	O.	N	I	I	I	I
			100	Sc.	100	I	I	I	I
224	28952	2H-1,3-Oxazine, 3-benzoyl-2-(1-ethylpentyl)-tetrahydro-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
225	28948	2H-1,3-Oxazine, 3-benzoyltetrahydro-2-isopropyl-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
226	28965	2H-1,3-Oxazine, 3-benzoyltetrahydro-2-(3-pyridyl)-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
227	28963	Oxazolidine, 3-acetyl-2-(2,6-dimethyl-5-heptenyl)-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
228	28927	Oxazolidine, 3-acetyl-4,4-dimethyl-2-phenyl-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
229	70138	Oxazolidine, 3-acetyl-4-ethyl-2-(1-ethylpentyl)-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
230	28926	Oxazolidine, 3-acetyl-4-ethyl-2-isopentyl-2-methyl-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
231	70140	Oxazolidine, 3-acetyl-2-(1-ethylpentyl)-	100	O.	N	I	I	I	I
			100	Sc.	100	I	I	I	I
232	70139	Oxazolidine, 3-acetyl-2-(1-ethylpentyl)-4,4-dimethyl-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
233	28929	Oxazolidine, 3-acetyl-4-ethyl-2-phenyl-	100	O.	N	I	I	I	I
			100	Sc.	100	I	I	I	I
234	28867	Oxazolidine, 3-acetyl-2-isopentyl-2-methyl-	100	O.	100	I	I	I	I
			100	Sc.	N	I	I	I	I
235	28928	Oxazolidine, 3-acetyl-2-[3,4-(methylenedioxy)-phenyl]-	100	O.	N	I	I	I	I
			100	Sc.	100	I	I	I	I
236	28868	Oxazolidine, 3-acetyl-2-phenyl-	100	O.	N	I	I	I	I
			100	Sc.	100	I	I	I	I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)-- Lethal to guinea pigs	Causing 100 percent kill of-- Larvae of-- Secondary screwworms	Black blow flies	Adult stable flies	Nymphal lone star ticks
237	28878	Oxazolidine, 3-benzoyl-4-ethyl-2-isopentyl-2-methyl-	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
238	28875	Oxazolidine, 3-benzoyl-2-ethyl-2-methyl-	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
239	28874	Oxazolidine, 3-benzoyl-2-isobutyl-2-methyl-	100 O.	N	I	I	I	I
			100 Sc.	100	I	I	I	I
240	28869	Oxazolidine, 3-benzoyl-2-isopentyl-2-methyl-	100 O.	100	I	I	I	I
			100 Sc.	N	I	I	I	I
241	28866	Oxazolidine, 3-benzoyl-2-phenyl-	100 O.	N	I	I	I	I
			100 Sc.	100	I	I	I	I
242	28864	Oxazolidine, 3-butyl-2-phenyl-	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
243	27535	2,4-Pentanediol, cyclic sulfite, meso-	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
244	27400	2-Pentenoic acid, 2,3,5,5,5-pentachloro-4-oxo-, (Z)-	100 O.	N	I	I	I	I
			100 Sc.	100	I	I	I	I
245	27401	2-Pentenoic acid, 2,3,5,5,5-pentachloro-4-oxo-, phenyl ester, (Z)-	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I

246	27463	3-Penten-2-one, 4-methyl-, O-(methylcarbamyl)-oxime, (Z)-	100	O.	50	I	I	I	I
			100	Sc.	10	I	I	I	I
247	27994	Phenol, 2-bromo-4-chloro-6-nitro-	100	O.	100	I	I	I	I
			100	Sc.	50	I	I	I	I
248	27627	Phenyl isocyanide, p-[(p-tert-butylphenyl)-thio]-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
249	27825	3-Phospholene, 3-chloro-1-methoxy-, 1-sulfide	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
250	29094	Phosphonamidothioic acid, N-(a-aminobenzylidene)-P-ethyl-, S-methyl ester	100	O.	50	I	I	I	I
			100	Sc.	50	100	100	25	50
251	27641	Phosphonamidothioic acid, P-ethyl-, S-ethyl ester	10	O.	10	10	5	I	I
			10	Sc.	5	5	5	I	10
252	27872	Phosphonic acid, phenyl-, O-(4-bromo-2,5-dichlorophenyl) O-methyl ester	100	O.	N	I	I	I	I
			100	Sc.	100	I	I	I	I
253	27729	Phosphonic acid, [(1,2,2-trichloroethyl)sulfinyl]-, diethyl ester	100	O.	25	I	I	I	I
			100	Sc.	10	I	I	I	I
254	27730	Phosphonodithioic acid, allyl-, S,S-dipropyl ester	100	O.	100	I	I	I	I
			100	Sc.	50	I	I	I	I
255	27948	Phosphonodithioic acid, ethyl-, O-benzyl S-2-propynyl ester	50	O.	10	I	I	I	I
			50	Sc.	50	I	I	I	I
256	27747	Phosphonodithioic acid, ethyl-, S-(2-bromo-2-chloroethyl) O-ethyl ester	50	O.	10	I	I	I	I
			50	Sc.	25	I	I	I	I
257	27632	Phosphonodithioic acid, ethyl-, S-(p-chlorophenyl) O-isobutyl ester	100	O.	5	I	I	I	I
			100	Sc.	100	I	I	I	I
258	27946	Phosphonodithioic acid, ethyl-, O-cyclopentyl S-2-propynyl ester	50	O.	10	I	I	I	I
			50	Sc.	25	I	I	I	I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration		Lowest dosage (mg/kg)-- Lethal to guinea pigs	Causing 100 percent kill of-- Larvae of-- Secondary screwworms	Black blow flies	Adult stable flies	Nymphal lone star ticks
259	27361	Phosphonodithioic acid, ethyl-, S-[(2,4-dichlorophenoxy)methyl] O-propyl ester	100	O.	25	I	I	I	I
			100	Sc.	50	I	I	I	I
260	27857	Phosphonodithioic acid, ethyl-, S-[(ethylthio)-methyl] ester, O-ester with acetone oxime	10	O.	5	I	I	I	I
			10	Sc.	1	I	I	I	I
261	27861	Phosphonodithioic acid, ethyl-, S-phenyl ester, O-ester with acetone oxime	50	O.	10	I	I	I	I
			50	Sc.	10	I	I	I	I
262	27838	Phosphonodithioic acid, (2-isopropoxyvinyl)-, S,S-dipropyl ester	100	O.	25	I	I	I	I
			100	Sc.	10	I	I	I	I
263	27839	Phosphonodithioic acid, [2-(isopropylthio)-vinyl]-, S,S-dimethyl ester	100	O.	50	I	I	I	I
			100	Sc.	25	I	I	I	I
264	27661	Phosphonodithioic acid, (2-methoxyvinyl)-, S,S-diisopropyl ester	100	O.	100	I	I	I	I
			100	Sc.	50	I	I	I	I
265	27916	Phosphonothioic acid, ethyl-, O-(7-chlorobenzofurazan-4-yl) O-ethyl ester	50	O.	10	I	I	I	I
			50	Sc.	10	I	I	I	I
266	27919	Phosphonothioic acid, ethyl-, O-(2,5-dichloro-4-iodophenyl) O-ethyl ester	100	O.	50	100	50	I	I
			100	Sc.	50	I	I	I	I
267	27575	Phosphonothioic acid, ethyl-, O-[α-(diethylamino)-4-(methylthio)-o-tolyl] O-ethyl ester	10	O.	5	I	I	I	I
			50	Sc.	10	I	I	I	I

268	27860	Phosphonothioic acid, ethyl-, O-ester with acetone oxime, O-ester with p-hydroxybenzonitrile	10 25	O. Sc.	10 25	I I	I I	I I	I I
269	27666	Phosphonothioic acid, ethyl-, O-ethyl ester, O-ester with p-hydroxybenzaldehyde, O-(butylcarbamoyl)oxime	100 100	O. Sc.	10 10	25 25	25 I	I I	100 I
270	27549	Phosphonothioic acid, ethyl-, O-ethyl ester, O-ester with p-hydroxybenzaldehyde, O-[(m-chlorophenyl)carbamoyl]oxime	50 50	O. Sc.	10 10	I I	I I	I I	I I
271	27859	Phosphonothioic acid, ethyl-, O-(4-nitro-m-tolyl) ester, O-ester with acetone oxime	50 50	O. Sc.	10 25	I I	I I	I I	I I
272	27913	Phosphonothioic acid, ethyl-, O-(4-nitro-m-tolyl) ester, O-ester with 3,3-dimethyl-2-butanone oxime	10 10	O. Sc.	10 5	I I	I I	I I	I I
273	27912	Phosphonothioic acid, ethyl-, O-(2,4,5,-trichlorophenyl) ester, O-ester with acetone oxime	25 25	O. Sc.	10 25	I I	I I	I I	I I
274	29098	Phosphonothioic acid, methyl-, O-(4-bromo-2,5-dichlorophenyl) O-methyl ester	100 100	O. Sc.	N 50	50 25	50 25	I I	I I
275	27453	Phosphonothioic acid, methyl-, O-(4-bromo-2,5-dichlorophenyl) O-propyl ester	100 100	O. Sc.	50 100	100 I	50 I	I I	I I
276	27634	Phosphonothioic acid, methyl-, O-[2,5-dichloro-4-(methylthio)phenyl] O-ethyl ester	100 100	O. Sc.	10 50	I 10	I 50	I I	I I
277	27471	Phosphonothioic acid, methyl-, O-(3,4-dichlorophenyl) O-methyl ester	100 100	O. Sc.	25 100	100 100	100 50	[7]100 I	100 I
278	27399	Phosphonothioic acid, methyl-, O-ethyl O-6-quinolyl ester	100 100	O. Sc.	[5]5 [5]1	100 100	100 100	I I	10 50
279	27378	Phosphonothioic acid, phenyl-, O-(4-bromo-2,5-dichlorophenyl) O-methyl ester	100 100	O. Sc.	50 100	100 I	100 I	100 I	I I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)-- Lethal to guinea pigs	Causing 100 percent kill of-- Larvae of-- Secondary screwworms	Black blow flies	Adult stable flies	Nymphal lone star ticks
280	29061	Phosphonothioic acid, phenyl-, O-ethyl O-(6-methyl-3-pyridyl) ester	100 O. 100 Sc.	25 50	I 10	I I	I I	50 50
281	29093	Phosphonotrithioic acid, ethyl-, tert-butyl ester, ester with N-(mercaptomethyl)phthalimide	100 O. 100 Sc.	25 50	I I	I I	I I	I I
282	29041	Phosphonotrithioic acid, ethyl-, (ethylthio)-methyl isopropyl ester	100 O. 100 Sc.	10 25	I I	I I	I I	I I
283	27979	Phosphoramidic acid, isopropyl-, ethyl ester, S-ester with mercapto-2-propanone O-methyloxime	50 O. 50 Sc.	25 25	I I	I I	I I	I I
284	27572	Phosphoramidic acid, isopropyl-, ethyl 4-(methylthio)-m-tolyl ester	100 O. 100 Sc.	50 100	25 10	25 25	I 25	25 100
285	27656	Phosphoramidic acid, isopropyl-, methyl p-nitrophenyl ester	100 O. 100 Sc.	N 100	I I	I I	I I	I I
286	27628	Phosphoramidic acid, (2-mercaptoethyl)-, diethyl ester, S-ester with O,O-dimethyl phosphorothioate	100 O. 100 Sc.	100 100	I I	I I	I I	I I
287	27629	Phosphoramidic acid, (2-mercaptoethyl)-, diethyl ester, S-ester with O-methyl O-propylphosphorothioate	100 O. 100 Sc.	25 50	I I	I I	I I	I I

288	27914	Phosphoramidic acid, methyl-, 2-(diethylamino)-6-methyl-4-pyrimidinyl methyl ester	100	O.	100	I	I	I	I
			100	Sc.	100	I	I	I	I
289	29009	Phosphoramidic acid, methyl-, 2-(dipropylamino)-6-methyl-4-pyrimidinyl methyl ester	100	O.	N	I	I	I	I
			100	Sc.	100	I	I	I	I
290	27732	Phosphoramidodithioic acid, isopropyl-, S,S-dimethyl ester	100	O.	N	I	I	I	I
			100	Sc.	25	I	I	I	I
291	27731	Phosphoramidodithioic acid, methyl-, S,S-dipropyl ester	100	O.	10	50	I	I	I
			100	Sc.	5	100	50	I	I
292	27822	Phosphoramidothioic acid, acetyl-, O,S-dimethyl ester	100	O.	N	50	25	25	I
			100	Sc.	100	50	25	25	100
293	27578	Phosphoramidothioic acid, (1-aminoethylidene)-, O,O-bis(p-bromophenyl)ester	50	O.	10	I	I	I	I
			50	Sc.	50	I	I	I	I
294	27579	Phosphoramidothioic acid, (1-aminoethylidene)-, O-(p-bromophenyl) O-methyl ester	10	O.	5	I	I	I	10
			10	Sc.	5	10	I	I	I
295	27580	Phosphoramidothioic acid, (1-aminoethylidene)-, O-(p-chlorophenyl) O-methyl ester	10	O.	5	I	I	I	I
			10	Sc.	5	I	I	I	I
296	27992	Phosphoramidothioic acid, (1-aminoethylidene)-, O,S-dimethyl ester	100	O.	100	100	50	100	100
			100	Sc.	100	25	100	100	100
297	27558	Phosphoramidothioic acid, isopropyl-, O-methyl O-(2,4,5-trichlorophenyl) ester	100	O.	N	50	25	I	I
			100	Sc.	100	25	25	I	I
298	27576	Phosphoramidothioic acid, methyl-, O-methyl O-[p-(methylthio)phenyl] ester	10	O.	5	5	10	I	5
			10	Sc.	10	10	10	I	10
299	27823	Phosphoramidothioic acid, propionyl-, O,S-dimethyl ester	100	O.	N	25	25	10	I
			100	Sc.	100	25	25	5	100
300	27490	Phosphoric acid, butyl 2,2-dichlorovinyl methyl ester	100	O.	10	I	I	I	I
			100	Sc.	5	I	I	I	I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration		Lowest dosage (mg/kg)-- Lethal to guinea pigs	Causing 100 percent kill of-- Larvae of-- Secondary screwworms	Black blow flies	Adult stable flies	Nymphal lone star ticks
301	27500	Phosphoric acid, 6-chlorobicyclo[3.2.0]hepta-2,6-dien-7-yl dimethyl ester	100	O.	N	I	I	I	I
			100	Sc.	50	I	I	I	I
302	29060	Phosphoric acid, 2-chloro-1-(2,4-dichlorophenyl)-vinyl ethyl methyl ester	100	O.	N	I	I	I	I
			100	Sc.	100	10	100	50	I
303	27743	Phosphoric acid, 2-chloro-1-pyrazol-1-ylvinyl diethyl ester	100	O.	5 2.5	I	I	I	I
			100	Sc.	5 1	I	I	I	I
304	27742	Phosphoric acid, 2,2-dichloro-1-(4,5-dimethylpyrazol-1-yl)vinyl diethyl ester	100	O.	5 25	I	I	I	I
			100	Sc	5 1	I	I	I	I
305	27741	Phosphoric acid, 2,2-dichloro-1-pyrazol-1-ylvinyl diethyl ester	100	O.	5 5	I	I	I	I
			100	Sc.	5 1	I	I	I	I
306	27612	Phosphoric acid, diethyl ester, ester with 1-allyl-6-methyl-2(1H)-pyridone	100	O.	5 5	I	I	I	I
			100	Sc.	5 1	25	100	I	100
307	27840	Phosphoric acid, diethyl ester, ester with 3-[(2,2-dichloro-1-hydroxyvinyl)oxy]propionitrile	100	O.	25	I	I	I	I
308	27626	Phosphoric acid, diethyl ester, ester with o-tolylglyoxylonitrile oxime	100	O.	N	I	I	I	I
			100	Sc.	50	I	I	I	I

309	27358	Phosphoric acid, dimethyl ester, ester with 2-chloro-N-ethylcrotonamide	100	O.	N	50	100	I	I
			100	Sc.	100	50	50	50	100
310	27357	Phosphoric acid, dimethyl ester, ester with 2-chloro-N-methylcrotonamide	100	O.	100	50	50	I	50
			100	Sc.	50	100	50	50	50
311	27610	Phosphoric acid, dimethyl ester, ester with 1,6-dimethyl-2(1H)-pyridone	100	O.	5	I	I	I	I
			100	Sc.	1	I	I	I	I
312	27625	Phosphoric acid, dimethyl ester, ester with (E)-3-hydroxy-N-methoxy-N-methylcrotonamide	100	O.	50	50	50	I	50
			100	Sc.	50	50	50	I	25
313	27611	Phosphoric acid, dimethyl ester, ester with 6-methyl-1-propyl-2(1H)-pyridone	100	O.	5	I	I	I	I
			100	Sc.	5 1	I	I	I	I
314	27744	Phosphoric acid, dimethyl 1,2,5-thiadiazol-3-yl ester	100	O.	100	I	I	I	I
			100	Sc.	5	I	I	I	I
315	27521	Phosphoric acid, dimethyl 3,5,6-trichloro-2-pyridyl ester	100	O.	N	I	I	I	I
			100	Sc.	100	I	I	I	I
316	27424	Phosphorodithioic acid, S-2-butenyl O,O-dimethyl ester	100	O.	N	I	I	I	I
			100	Sc.	100	I	I	I	I
317	29082	Phosphorodithioic acid, S-(6-chlorothiochroman-4-yl) O,O-dimethyl ester	100	O.	N	100	I	I	50
			100	Sc.	100	I	I	I	I
318	29081	Phosphorodithioic acid, S-(7-chlorothiochroman-4-yl) O,O-dimethyl ester	100	O.	N	I	I	I	100
			100	Sc.	100	I	I	I	I
319	25943	Phosphorodithioic acid, O,O-diethyl ester, S-ester with 1-acetyl-3-(mercaptomethyl)-5,5-dimethylhydantoin	100	O.	25	I	100	I	I
			100	Sc.	100	I	I	I	I
320	27650	Phosphorodithioic acid, O,O-diethyl ester, S-ester with 3-(2-chloro-1-mercaptoethyl)-2-benzoxazolinone	100	O.	25	I	I	I	I
			100	Sc.	100	I	I	I	I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)-- Lethal to guinea pigs	Causing 100 percent kill of-- Larvae of-- Secondary screwworms	Black blow flies	Adult stable flies	Nymphal lone star ticks
321	27562	Phosphorodithioic acid, O,O-diethyl ester, S-ester with 4-chloro-2-(mercaptomethyl)-1(2H)-phthalazinone	100 O. 100 Sc.	50 50	I I	I I	I I	I I
322	27316	Phosphorodithioic acid, O,O-diethyl ester, S-ester with N,N-diallyl-2-mercaptoacetamide	100 O. 100 Sc.	25 25	I I	50 100	I 50	I I
323	27768	Phosphorodithioic acid, O,O-diethyl ester, S-ester with 2',6'-diethyl-2-mercaptoacetanilide	100 O. 100 Sc.	50 100	[6] 50 [1]100	[6] 50 [6] 50	I I	I I
324	27736	Phosphorodithioic acid, O,O-diethyl ester, S-ester with 3-(difluoromethyl)-1-(mercaptomethyl)-4-methyl-Δ^2-1,2,4-triazoline 5-thione	100 O. 100 Sc.	5 25	I I	I I	I I	I I
325	27836	Phosphorodithioic acid, O,O-diethyl ester, S-ester with 4-(2-mercaptoethyl)-3-thiomorpholinone	100 O. 100 Sc.	25 25	I I	I I	I I	25 50
326	25938	Phosphorodithioic acid, O,O-diethyl ester, S-ester with 3-(mercaptomethyl)-2-benzothiazolinone	100 O. 100 Sc.	100 50	I I	I I	I I	I I
327	27707	Phosphorodithioic acid, O,O-diethyl ester, S-ester with 4-(mercaptomethyl)-2-methoxy-Δ^2-1,3,4-thiodiazolin-5-one	50 O. 50 Sc.	25 25	I I	I I	I I	I I

328	27911	Phosphorodithioic acid, O,O-diethyl ester, S-ester with 2-mercapto-N-methyl-N-(4-methyl-1,3-thiazol-2-yl)acetamide	50 50	O. Sc.	25 25	I I	I I	I I	I I
329	27735	Phosphorodithioic acid, O,O-diethyl ester, S-ester with 1-(mercaptomethyl)-4-methyl-3-(trifluoromethyl)-Δ^2-1,2,4-trizoline-5-thione	100 100	O. Sc.	10 100	100 100	I [1]100	I I	I I
330	27414	Phosphorodithioic acid, O,O-diethyl S-[2-(methylthio)propyl] ester	50 50	O. Sc.	10 25	I I	I I	I I	I I
331	25822	Phosphorodithioic acid, O,O-diethyl S-(tetrahydro-3-thienyl) ester	100 100	O. Sc.	50 N	[4] I [4] I		I I	I I
332	27370	Phosphorodithioic acid, O,O-diethyl S-(3,4,4-trifluoro-3-butenyl) ester	100 100	O. Sc.	N N	50 50	100 100	100 I	I I
333	27653	Phosphorodithioic acid, O,O-dimethyl ester, S-ester with 1-acetyl-3-(mercaptomethyl)-5,5-dimethylhydantoin	100 100	O. Sc.	50 100	100 50	50 100	I I	25 100
334	27652	Phosphorodithioic acid, O,O-dimethyl ester, S-ester with 1-acetyl-3-(mercaptomethyl)hydantoin	100 100	O. Sc.	[6] 10 [6] 10	25 25	25 25	I I	25 25
335	27956	Phosphorodithioic acid, O,O-dimethyl ester, S-ester with 1-hexanoyl-3-(mercaptomethyl)hydantoin	100 100	O. Sc.	N 100	I 100	100 50	I I	I 100
336	27360	Phosphorodithioic acid, O,O-dimethyl ester, S-ester with N-isopropyl-2-mercapto-N-methoxyacetamide	100 100	O. Sc.	N N	[6] 50 [6] 50	100 I	100 100	100 I
337	27346	Phosphorodithioic acid, O,O-dimethyl ester, S-ester with N-(2-mercaptoethyl)acetamide	100 100	O. Sc.	N N	25 25	10 25	50 50	25 25
338	27405	Phosphorodithioic acid, O,O-dimethyl ester, S-ester with N-(1-mercaptoethyl)succinimide	100 100	O. Sc.	N N	50 10	50 100	I I	100 I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)-- Causing 100 percent kill of--				
				Lethal to guinea pigs	Larvae of-- Secondary screwworms	Larvae of-- Black blow flies	Adult stable flies	Nymphal lone star ticks
339	27111	Phosphorodithioic acid, O,O-dimethyl ester, S-ester with 3-(mercaptomethyl)-2-benzothiazolinone	100 O. 100 Sc.	N N	I I	I I	I I	I I
340	27615	Phosphorodithioic acid, O,O-dimethyl ester, S-ester with 3-(mercaptomethyl)-1-methylhydantoin	100 O. 100 Sc.	100 100	50 50	100 100	I I	25 25
341	27614	Phosphorodithioic acid, O,O-dimethyl ester, S-ester with 3-(mercaptomethyl)-2,4-oxazolidinedione	100 O. 100 Sc.	50 100	50 100	25 100	25 50	25 100
342	25872	Phosphorodithioic acid, O,O-dimethyl ester, S-ester with N-(mercaptomethyl)succinimide	50 O. 50 Sc.	50 50	10 25	25 50	50 I	25 25
343	27798	Phosphorodithioic acid, O,O-dimethyl ester, S-ester with mercapto-2-propanone dimethyl mercaptal	100 O. 100 Sc.	100 100	I I	I I	I I	I I
344	27980	Phosphorodithioic acid, O,O-dimethyl ester, S-ester with mercapto-2-propanone O-methyloxime	100 O. 100 Sc.	100 N	I I	I I	I I	I I
345	27412	Phosphorodithioic acid, O,O-dimethyl S-[2-(methylthio)propyl] ester	100 O. 100 Sc.	N 100	100 I	50 I	100 I	25 50

346	27422	Phosphorodithioic acid, O,O-dimethyl S-propenyl ester	100 100	O. Sc.	N 100	100 I	I I	[1]100 100	I I
347	27848	Phosphorodithioic acid, O-ethyl S-[2-(isopropylthio)ethyl] S-propyl ester	100 100	O. Sc.	100 50	I 100	100 100	I I	100 I
348	27806	Phosphorodithioic acid, O-ethyl S-[2-(methylsulfinyl)ethyl] S-propyl ester	100 100	O. Sc.	50 25	100 50	50 50	I I	50 50
349	27761	Phosphorodithioic acid, O-ethyl S-[2-(methylthio)ethyl] S-propyl ester	100 100	O. Sc.	50 5	50 50	50 50	I I	50 50
350	27760	Phosphorodithioic acid, O-ethyl S-[2-(methylthio)propyl] S-propyl ester	100 100	O. Sc.	100 25	I 50	I 25	I I	I 50
351	27808	Phosphorodithioic acid, O-ethyl S-[2-(phenylthio)ethyl] S-propyl ester	100 100	O. Sc.	100 100	I I	I I	I I	I I
352	27807	Phosphorodithioic acid, O-ethyl S-propyl ester, S-ester with 3-(mercaptomethyl)-1-methylhydrouracil	50 50	O. Sc.	25 10	25 25	25 50	I I	25 50
353	27837	Phosphorodithioic acid, O-ethyl S-propyl ester, S-ester with 3-(mercaptomethyl)-1-methyl-2,4(1H,3H)-quinazolinedione	100 100	O. Sc.	50 10	I I	I I	I I	I I
354	27762	Phosphorodithioic acid, O-ethyl S-propyl S-[2-(propylthio)ethyl] ester	100 100	O. Sc.	50 10	100 50	100 50	I I	[6]100 [6]25
355	27759-X	Phosphorodithioic acid, O-ethyl S-propyl S-[2-(propylthio)propyl] ester (crude)	100 100	O. Sc.	100 25	I I	I I	I I	100 I
356	27413	Phosphorodithioic acid, S-[2-(ethylthio)propyl] O,O-dimethyl ester	100 100	O. Sc.	N 100	[6]25 I	[6]25 I	100 I	25 [1]100
357	27901	Phosphorodithioic acid, S-[(5-methoxy-1,2,4-thiadiazol-3-yl)methyl] O,O-dimethyl ester	100 100	O. Sc.	N 100	I 50	I I	I I	I I
358	27482	Phosphorodithioic acid, O,O,S-trimethyl ester	100 100	O. Sc.	N 100	I I	I I	I [1]100	I I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration		Lowest dosage (mg/kg)-- Causing 100 percent kill of-- Lethal to guinea pigs	Larvae of-- Secondary screwworms	Larvae of-- Black blow flies	Adult stable flies	Nymphal lone star ticks
359	27845	Phosphorothioic acid, O-1,2-benzisoxazol-3-yl O,O-diethyl ester	100	O.	50	I	I	I	[6] 50
			100	Sc.	50	50	I	[6] 50	I
360	27607	Phosphorothioic acid, O-(3-bromo-5,7-dimethylpyrazolo[1,5-a]pyrimidin-2-yl) O,O-diethyl ester	100	O.	50	I	I	I	I
			100	Sc.	100	I	I	I	I
361	27826	Phosphorothioic acid, O-(3-bromo-7-methylpyrazolo[1,5-a]pyrimidin-2-yl) O,O-diethyl ester	100	O.	25	I	I	I	I
			100	Sc.	10	I	I	I	I
362	29038	Phosphorothioic acid, O-butyl O-methyl O-1,2,5-thiadiazol-3-yl ester	100	O.	50	I	I	I	I
			100	Sc.	5	I	I	I	I
363	27444	Phosphorothioic acid, O-(4-chloro-7-benzofurazanyl) O,O-dimethyl ester	100	O.	N	I	I	I	I
			100	Sc.	50	I	I	100	I
364	27608	Phosphorothioic acid, O-(3-chloro-5,7-dimethylpyrazolo[1,5-a]pyrimidin-2-yl) O,O-diethyl ester	100	O.	50	I	I	I	I
			100	Sc.	100	I	I	I	I
365	29008-X	Phosphorothioic acid, O-(6(or 7)-chloro-2-quinoxalinyl) O,O-diethyl ester	100	O.	N	50	I	I	I
			100	Sc.	50	50	I	I	I
366	27331	Phosphorothioic acid, S-(4-chlorotetrahydro-3-thienyl) O,O-diethyl ester, 1,1-dioxide	100	O.	10	I	I	I	I
			100	Sc.	5	I	I	I	I

367	29083	Phosphorothioic acid, S-(6-chlorothiochroman-4-yl) O,O-dimethyl ester	100	O.	N	I	I	100	100
			100	Sc.	25	I	I	I	I
368	29099	Phosphorothioic acid, O-[2,5-dichloro-4-(ethylthio)phenyl] O,O-dimethyl ester	100	O.	N	I	100	I	I
			100	Sc.	100	I	I	I	I
369	27635	Phosphorothioic acid, O-[2,5-dichloro-4-(methylthio)phenyl] O,O-diethyl ester	100	O.	50	50	25	I	I
			100	Sc.	100	10	50	I	I
370	27908	Phosphorothioic acid, O-[2,5-dichloro-4-(methylthio)phenyl] O,O-dimethyl ester	100	O.	100	I	I	I	I
			100	Sc.	50	50	100	I	I
371	27698	Phosphorothioic acid, O-[2-(diethylamino)-6-methyl-4-pyrimidinyl] O,O-diethyl ester	100	O.	50	[6] 25	[6] 25	I	I
			100	Sc.	100	100	I	I	[6] 50
372	27699	Phosphorothioic acid, O-[2-(diethylamino)-6-methyl-4-pyrimidinyl] O,O-dimethyl ester	100	O.	N	100	100	100	I
			100	Sc.	100	100	100	I	I
373	27577	Phosphorothioic acid, O,O-diethyl ester, S-ester with N-(1-cyano-1-methylethyl)-2-mercaptoacetamide	100	O.	10	I	100	I	50
			100	Sc.	25	I	100	I	50
374	27900	Phosphorothioic acid, O,O-diethyl ester, O-ester with N,N-diethyl-3-hydroxy-6-oxo-1(6H)-pyridazinecarboxamide	100	O.	25	25	50	I	[6] 25
			100	Sc.	10	100	25	I	25
375	27812	Phosphorothioic acid, O,O-diethyl ester, S-ester with 5,5-dimethyl-3-thiomorpholinone	10	O.	5	I	I	I	I
			10	Sc.	2.5	I	I	I	I
376	29095	Phosphorothioic acid, O,O-diethyl ester, O-ester with 3-ethoxy-5-hydroxyisothiazole-4-carbonitrile	100	O.	50	I	I	I	I
			100	Sc.	50	I	I	I	I
377	27543	Phosphorothioic acid, O,O-diethyl ester, O-ester with 4'-hydroxyacetophenone O-(butylcarbamoyl)oxime	100	O.	100	100	I	50	I
			100	Sc.	50	I	I	I	I
378	27654	Phosphorothioic acid, O,O-diethyl ester, O-ester with 4'-hydroxyacetophenone O-(ethoxycarbonyl)oxime	100	O.	50	100	[6] 25	I	I
			100	Sc.	50	100	I	I	I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)-- Lethal to guinea pigs	Causing 100 percent kill of-- Larvae of-- Secondary screwworms	Black blow flies	Adult stable flies	Nymphal lone star ticks
379	27542	Phosphorothioic acid, O,O-diethyl ester, O-ester with 4'-hydroxyacetophenone O-(methylcarbamoyl)oxime	100 O. 100 Sc.	50 100	50 25	50 I	50 50	I I
380	27648	Phosphorothioic acid, O,O-diethyl ester, O-ester with 4-hydroxy-m-anisaldehyde O-(methylcarbamoyl)oxime	100 O. 100 Sc.	100 25	[6] 50 25	100 I	50 I	I I
381	27507	Phosphorothioic acid, O,O-diethyl ester, O-ester with p-hydroxybenzaldehyde O-(allylcarbamoyl)oxime	50 O. 50 Sc.	10 10	50 10	50 I	10 10	I I
382	27665	Phosphorothioic acid, O,O-diethyl ester, O-ester with p-hydroxybenzaldehyde O-(1H-azepin-1-ylcarbonyl)oxime	100 O. 100 Sc.	25 10	I [6] 50	[6] 25 [6] 5	25 I	I I
383	27508	Phosphorothioic acid, O,O-diethyl ester, O-ester with p-hydroxybenzaldehyde O-(butylcarbamoyl)oxime	50 O. 50 Sc.	25 25	50 I	10 I	10 25	I I
384	27664	Phosphorothioic acid, O,O-diethyl ester, O-ester with p-hydroxybenzaldehyde O-(dimethylcarbamoyl)oxime	100 O. 100 Sc.	50 50	25 25	25 25	10 25	50 I
385	27720	Phosphorothioic acid, O,O-diethyl ester, O-ester with p-hydroxybenzaldehyde O-(hexylcarbamoyl)oxime	100 O. 100 Sc.	25 100	[6] 25 I	50 I	I I	I I

386	27506	Phosphorothioic acid, O,O-diethyl ester, O-ester with p-hydroxybenzaldehyde O-(methylcarbamoyl)oxime	50 50	O. Sc.	10 25	10 25	10 50	5 5	I I
387	27647	Phosphorothioic acid, O,O-diethyl ester, O-ester with p-hydroxybenzaldehyde O-(morpholinocarbonyl)oxime	100 100	O. Sc.	50 50	50 100	50 100	50 I	100 I
388	27950	Phosphorothioic acid, O,O-diethyl ester, O-ester with 3-hydroxy-N,N-dimethyl-6-oxo-1(6H)-pyridazinepropionamide	10 10	O. Sc.	5 5	I [1] 10	I [1] 10	I I	I [1] 10
389	29096	Phosphorothioic acid, O,O-diethyl ester, O-ester with 5-hydroxy-3-methoxyisothiazole-4-carbonitrile	50 50	O. Sc.	50 50	I I	I I	I I	I I
390	27544	Phosphorothioic acid, O,O-diethyl ester, O-ester with 4'-hydroxy-2'-methylacetophenone O-acetyloxime	100 100	O. Sc.	N 100	100 I	100 I	100 I	100 I
391	27651	Phosphorothioic acid, O,O-diethyl ester, S-ester with 3-(mercaptomethyl)-2,4-oxazolidinedione	10 10	O. Sc.	1 1	10 I	I I	I I	10 5
392	29042	Phosphorothioic acid, O,O-diethyl ester, O-ester with 2-thiopheneglyoxylonitrile oxime	100 100	O. Sc.	N 100	I I	I I	[1]100 I	[1]100 I
393	27841	Phosphorothioic acid, O,O-diethyl ester, O-ester with o-tolylglyoxylonitrile oxime	100 100	O. Sc.	N 100	I I	I I	[1]100 [1]100	50 I
394	27416	Phosphorothioic acid, O,O-diethyl S-[2-(ethylthio)propyl] ester	100 100	O. Sc.	25 10	I I	I I	I I	I I
395	27764	Phosphorothioic acid, O,O-diethyl O-(1-phenyl-1H-1,2,4-triazol-3-yl) ester	100 100	O. Sc.	25 10	50 50	100 50	I 100	I 50
396	27394	Phosphorothioic acid, O,O-diethyl O-2-quinoxalinyl ester	100 100	O. Sc.	25 10	I I	I I	I I	I I
397	27371	Phosphorothioic acid, O,O-diethyl S-(3,4,4-trifluoro-3-butenyl) ester	100 100	O. Sc.	100 50	50 50	50 50	50 100	I 100

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration		Lowest dosage (mg/kg)-- Lethal to guinea pigs	Causing 100 percent kill of-- Larvae of-- Secondary screwworms	Black blow flies	Adult stable flies	Nymphal lone star ticks
398	27769	Phosphorothioic acid, O,O-dimethyl ester, O-ester with 2-chloro-N,N-diethyl-4-hydroxybenzenesulfonamide	100	O.	N	I	100	100	I
			100	Sc.	100	50	100	100	I
399	27609	Phosphorothioic acid, O,O-dimethyl ester, O-ester with 1,6-dimethyl-2(1H)-pyridone	100	O.	10	I	I	I	I
			100	Sc.	5	I	I	I	I
400	27820	Phosphorothioic acid, O,O-dimethyl ester, S-ester with N-ethyl-3-mercaptoacrylamide, (Z)-	50	O.	50	10	5	25	50
			50	Sc.	25	10	10	I	25
401	27746	Phosphorothioic acid, O,O-dimethyl ester, O-ester with glyoxylonitrile, p-hydroxyphenyl isopropyl mercaptal	100	O.	100	25	25	50	25
			100	Sc.	100	I	100	I	I
402	27745	Phosphorothioic acid, O,O-dimethyl ester, O-ester with [(p-hydroxyphenyl)thio]phenylacetonitrile	100	O.	100	25	25	50	50
			100	Sc.	100	I	I	I	100
403	27815	Phosphorothioic acid, O,O-dimethyl ester, S-ester with 3-(mercaptomethyl)-1,5-dimethylhydrouracil	100	O.	100	100	100	I	10
			100	Sc.	10	25	25	I	10
404	27805	Phosphorothioic acid, O,O-dimethyl ester, S-ester with 3-(mercaptomethyl)-1-(2-methoxyethyl)hydantoin	25	O.	25	I	I	I	10
			25	Sc.	25	I	I	I	25

405	27618	Phosphorothioic acid, O,O-dimethyl ester, S-ester with 3-(mercaptomethyl)-1-methylhydantoin	25	O.	10	10	10	I	10
			25	Sc.	10	2.5	5	I	2.5
406	27804	Phosphorothioic acid, O,O-dimethyl ester, S-ester with 3-(mercaptomethyl)-1-methylhydrouracil	50	O.	25	25	25	I	5
			50	Sc	50	50	50	I	10
407	27617	Phosphorothioic acid, O,O-dimethyl ester, S-ester with 3-(mercaptomethyl)-2,4-oxazolidinedione	50	O.	25	25	25	I	10
			50	Sc.	25	10	10	I	5
408	27616	Phosphorothioic acid, O,O-dimethyl ester, S-ester with 3-(mercaptomethyl)-2,4-thiazolidinedione	10	O.	10	10	10	I	I
			10	Sc.	5	5	5	I	5
409	27813	Phosphorothioic acid, O,O-dimethyl ester, S-ester with 2-mercapto-N-(2-oxo-3-oxazolidinyl)-acetamide	100	O.	N	I	I	I	[6] 50
			100	Sc.	100	100	100	I	[6] 50
410	29102	Phosphorothioic acid, O,O-dimethyl ester, O-ester with phenylglyoxylonitrile oxime	100	O.	100	I	I	I	I
			100	Sc.	100	I	I	I	I
411	29043	Phosphorothioic acid, O,O-dimethyl ester, O-ester with 2-thiopheneglyoxylonitrile oxime	100	O.	N	I	I	I	I
			100	Sc.	50	100	I	I	I
412	29101	Phosphorothioic acid, O,O-dimethyl ester, O-ester with o-tolylglyoxylonitrile oxime	100	O.	N	I	I	I	I
			100	Sc.	50	I	I	I	I
413	29037	Phosphorothioic acid, O,O-dimethyl O-(5-phenyl-1,2,4-thiadiazol-3-yl) ester	100	O.	N	I	I	I	I
			100	Sc.	100	[1]100	I	I	I
414	29040	Phosphorothioic acid, O,O-dimethyl O-1,2,5-thiadiazol-3-yl ester	100	O.	N	I	I	I	I
			100	Sc.	100	25	I	I	I
415	27520	Phosphorothioic acid, O,O-dimethyl O-(3,5,6-trichloro-2-pyridyl) ester	100	O.	N	I	I	I	I
			100	Sc.	100	25	I	I	I
416	27161	Phosphorothioic acid, O,O'-(sulfonyldi-p-phenylene) O,O,O',O'-tetramethyl ester	100	O.	100	I	I	I	I
			100	Sc.	100	I	I	I	I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)-- Lethal to guinea pigs	Causing 100 percent kill of-- Larvae of-- Secondary screwworms	Black blow flies	Adult stable flies	Nymphal lone star ticks
417	28800	Piperidine, 1-benzoyl-2-methyl-	100 O.	N	I	I	I	I
			100 Sc.	50	I	I	I	I
418	28801	Piperidine, 1-benzoyl-4-methyl-	100 O.	N	I	I	I	I
			100 Sc.	50	I	I	I	I
419	27529	Piperidine, 1-decyl-	100 O.	N	I	I	I	I
			100 Sc.	100	I	I	I	I
420	27541	Piperidine, 1-decyl-4-methyl-	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I
421	28565	Piperidine, 2,6-dimethyl-1-m-toluoyl-	100 O.	N	I	I	I	I
			100 Sc.	100	I	I	I	I
422	70282	Piperidine, 1-[2-[2-(2-isobornyloxy)ethoxy]-ethyl]-	100 O.	N	I	I	I	I
			100 Sc.	100	I	I	I	I
423	27533	Piperidine, 1-(5,5,7,7-tetramethyl-2-octenyl)-	100 O.	100	I	I	I	I
			100 Sc.	N	I	I	I	I
424	28563	Piperidine, 1-m-toluoyl-2-propyl-	100 O.	N	I	I	I	I
			100 Sc.	100	I	I	I	I
425	28564	Piperidine, 1-m-toluoyl-4-propyl-	100 O.	N	I	I	I	I
			100 Sc.	N	I	I	I	I

426	27991	Pivalic acid, ester with 3-hydroxy-2-mesetylindone	100	O.	N	I	I	I	5
			100	Sc.	50	I	I	I	5
427	27990	Propane, 1,1-bis(p-ethoxyphenyl)-2-nitro-	100	O.	50	I	I	I	I
			100	Sc.	50	I	I	I	I
428	23395	Propane, 1,1-bis(p-methoxyphenyl)-2,2-dimethyl-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
429	70446	1-Propanol, 2-[(3,7-dimethyloctyl)amino]-2-methyl-	100	O.	N	I	I	I	I
			100	Sc.	100	I	I	I	I
430	70515	1-Propanol, 2-methyl-2-(octylamino)-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
431	27571	1-Propanone, 2-methyl-1-(2-thienyl)-, O-(methylcarbamoyl)oxime	100	O.	25	I	I	I	I
			100	Sc.	10	I	I	I	I
432	27796	Propionic acid, 2-bromo-2-methyl-, 5-chloro-2-(dimethylamino)-α-phenylbenzyl ester	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
433	27785	Propionic acid, 2-bromo-2-methyl-, 5-chloro-2-(dimethylamino)-α-o-tolylbenzyl ester	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
434	27794	Propionic acid, 2-phenoxy-, 5-chloro-2-dimethylamino)-α-phenylbenzyl ester	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
435	27779	Propionic acid, 2-phenoxy-, 5-chloro-2-dimethylamino)-α-o-tolylbenzyl ester	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
436	27528	Pyridine, 2-(2-methoxyethoxy)-	100	O.	N	I	I	I	I
			100	Sc.	100	I	I	I	I
437	28870	Pyrrolidine, 1-benzoyl-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
438	27957	Pyruvaldehyde, 1-(phenylhydrazone)	100	O.	N	I	I	I	I
			100	Sc.	100	I	I	I	I
439	29020	Salicylanilide, 3'-chloro-4'(p-chlorophenoxy)-3,5-diiodo-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)-- Causing 100 percent kill of--			
				Lethal to guinea pigs	Larvae of-- Secondary screwworms	Black blow flies	Adult stable flies	Nymphal lone star ticks
440	27748	Salicylic acid, isopropyl ester, O-ester with O-ethyl isopropylphosphoroamidothioate	100 O.	50	25	25	25	25
			100 Sc.	100	25	50	I	50
441	27658	Salicylic acid, isopropyl ester, O-ester with O-ethyl phosphoramidothioate	100 O.	N	50	10	I	I
			100 Sc.	N	50	[6] 25	I	[6] 50
442	27659	Salicylic acid, isopropyl ester, O-ester with O-methyl phosphoramidothioate	100 O.	50	25	25	I	25
			100 Sc.	50	10	25	100	25
443	27739	Stannane, chlorotris(β,β-dimethylphenethyl)-	100 O.	100	I	I	I	I
			100 Sc.	50	I	I	I	I
444	27428	Stannane, hexamethyldi-	100 O.	5	50	50	2.5	I
			100 Sc.	25	50	50	25	I
445	27799	Stannane, tributyl[(phenylsulfonyl)methyl]-	100 O.	50	I	I	I	I
			100 Sc.	100	I	I	I	I
446	29047	Stannane, tricyclohexylmercapto-, O,O-diisopropyl phosphorodithioate	100 O.	50	I	I	I	I
			100 Sc.	50	I	I	I	I
447	27476	Succinic acid, mercapto-, bis[(methylthio)methyl] ester, S-ester with O,O-diethyl phosphorodithioate	100 O.	10	I	I	I	I
			100 Sc.	25	I	I	I	50
448	27226	Sulfurous acid, 2-(p-tert-butylphenoxy)cyclohexyl 2-propynyl ester	100 O.	100	I	I	I	I
			100 Sc.	N	I	I	I	I

449	27855	Sulfurous acid, 1-[(p-tert-butylphenoxy)methyl]-propyl 2-butynyl ester	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
450	27280	Sulfurous acid, decyl 2-propynyl ester	100	O.	100	I	I	I	I
			100	Sc.	N	I	I	I	I
451	27534	Sulfurous acid, diphenyl ester	100	O.	N	I	I	I	I
			100	Sc	100	I	I	I	I
452	27852	Sulfurous acid, dodecyl 2-propynyl ester	100	O.	100	I	I	I	I
			100	Sc.	100	I	I	I	I
453	27279	Sulfurous acid, hexyl 2-propynyl ester	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
454	27853	Sulfurous acid, octyl 2-propynyl ester	100	O.	N	I	I	I	I
			100	Sc.	100	I	I	I	I
455	28865	2,4,8,10-Tetraoxaspiro[5.5]undecane, 3,3,9,9-tetramethyl-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
456	27525	Thiocyanic acid, 2-methyl-1-naphthyl ester	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
457	27733	3(2H)-Thiophenone, dihydro-4,4-dimethyl-, O-(methylcarbamoyl)oxime	10	O.	1.0	I	I	I	I
			10	Sc.	0.1	I	I	I	I
458	28950	m-Toluamide, N,N-diethyl-6-nitro-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
459	70084	o-Toluamide, N,N-dipentyl-	100	O.	N	--	I	I	I
			100	Sc.	N	--	I	I	I
460	70079	Toluene, 2,4,6-trimethyoxy-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
461	27789	m-Toluic acid, 5-chloro-2-(dimethylamino)-α-phenylbenzyl ester	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
462	27777	m-Toluic acid, 5-chloro-2-(dimethylamino)-α-o-tolylbenzyl ester	100	O.	100	I	I	I	I
			100	Sc.	100	I	I	I	I

See footnotes at end of table.

TABLE 2.--Systemic effectiveness of 474 compounds against secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs--Continued

[N, no dosage was lethal; I, no dosage was systemically active]

Item No.	AI3 No. (AI3-)	Chemical	Highest dosage (mg/kg) and method of administration	Lowest dosage (mg/kg)-- Causing 100 percent kill of-- Lethal to guinea pigs	Larvae of-- Secondary screwworms	Black blow flies	Adult stable flies	Nymphal lone star ticks
463	27788	o-Toluic acid, 5-chloro-2-(dimethylamino)-α-phenylbenzyl ester	100 O.	N	I	I	I	100
			100 Sc.	N	I	I	I	100
464	27773	o-Toluic acid, 5-chloro-2-(dimethylamino)-α-o-tolybenzyl ester	100 O.	50	I	I	I	I
			100 Sc.	N	I	I	I	I
465	29019	p-Toluoyl chloride, phenylhydrazone	100 O.	10	I	I	I	I
			100 Sc.	50	I	I	I	I
466	70447	Triethylamine, 2-[(decahydro-2-naphthyl)oxy]-	100 O.	N	I	I	I	I
			100 Sc.	100	I	I	I	I
467	70182-X	Triethylamine, 2-[3-(2-isobornyloxy)propoxy]-	100 O.	N	I	I	I	I
			100 Sc.	100	I	I	I	I
468	70180	Triethylamine, 2-[4-(p-menth-1-en-8-yl)butoxy]-	100 O.	100	I	I	I	I
			100 Sc.	100	I	I	I	I
469	70280	Triethylamine, 2-[(p-menth-8-en-3-yl)oxy]-	100 O	N	I	I	I	I
			100 Sc.	100	I	I	I	I
470	70281	Triethylamine, 2-(9-octadecenyloxy)-	100 O.	N	I	I	I	I
			100 Sc.	100	I	I	I	I
471	70179	Triethylamine, 2-(octadecyloxy)-	100 O.	N	I	I	I	I
			100 Sc.	100	I	I	I	I

472	70151	Urea, 3-isobornyl-1,1-dimethyl-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
473	70152	Urea, 1-methoxy-1-methyl-3-[(exo-2-methyl-2-norbornyl)methyl]-	100	O.	N	I	I	I	I
			100	Sc.	N	I	I	I	I
474	27967	2,4-Xylidine, N,N'-[(methylimino)dimethylidyne]-di-	100	O.	100	I	I	I	I
			100	Sc.	N	I	I	I	I

[1]High but not complete mortality.

[2]Some indication of repellency.

[3]Complete mortality at 4 and 24 hours at 10 mg/kg.

[4]Screwworm larvae.

[5]Lowest dosage given.

[6]Not complete mortality at higher dosages.

[7]Complete mortality at 4 and 24 hours at 100 mg/kg.

AI3 No. (AI3-)	Company No.	Item No.
27507	Stauffer R-14488	381
27508	Stauffer R-14493	383
27509	Stauffer R-15552-A	13
27519	Shell SD 16898	18
27520	Dowco 214	415
27521	Dowco 217	315
27524	BAY 85032	99
27525	Thompson-Hayward TH-7465	456
27528	Reynolds SAA-6-A	436
27529	Reynolds SAA-14-G	419
27530	Reynolds SAA-21-G	174
27531	Reynolds SAA-23-G	173
27532	Reynolds SAA-26-G	172
27533	Reynolds SAA-28-A	423
27534	Reynolds SM-2-G	451
27535	Reynolds SM-4-G	243
27537	Reynolds SM-10-G	204
27538	Reynolds SM-11-G	202
27539	Reynolds SM-32-A	203
27540	Reynolds SM-50-A	161
27541	Reynolds SAA-74-A	420
27542	Stauffer R-14805	379
27543	Stauffer R-14855	377
27544	Stauffer R-15201	390
27545	Velsicol PCS 1301	30
27546	Velsicol PCS 1302	29
27549	Stauffer R-15022	270
27558	Dowco 177	297
27562	American Cyanamid CL 23358	321
27571	Upjohn U-26,549	431
27572	BAY 68138	284
27573	Diamond Shamrock "Cartap"	128
27575	BAY 53744	267
27576	BAY 64054	298
27577	Thompson-Hayward TH-427-1	373
27578	BAY 70926	293
27579	BAY 74747	294
27580	BAY 75752	295
27605	Geigy GS-19849	47
27607	BAY 75546	360
27608	BAY 79845	364
27609	Mobil MC 2951	399
27610	Mobil MC 2572	311
27611	Mobil MC 2702	313
27612	Mobil MC 2680	306
27613	Shell SD 17250	19
27614	Hercules 17409	341
27615	Hercules 17413	340
27616	Hercules 17884	408
27617	Hercules 18164	407
27618	Hercules 18526	405
27624	CIBA C-13963	81
27625	CIBA C-2307	312
27626	BAY 88991	308
27627	BAY 89504	248
27628	Pechiney-Progil LS 65-821	286
27629	Pechiney-Progil LS 67-559	287
27630	Stauffer R-13293	108
27632	Stauffer R-15792	257
27633	BAY 86256	34
27634	CELA K-673	276
27635	CELA S-2957	369
27636	Stauffer R-17335	129
27637	Stauffer R-12466	107
27638	Stauffer R-12783	104
27639	Stauffer R-13580	109
27640	Stauffer R-14327	106
27641	Stauffer R-16374	251
27645	Upjohn U-25,322	61
27646	Upjohn U-27,415	62
27647	Stauffer R-15996	387
27648	Stauffer R-14789	380
27649	International Minerals & Chemical 48003	93
27650	Hercules 16434	320
27651	Hercules 18290	391
27652	Hercules 18009	334
27653	Hercules 18010	333
27654	Stauffer R-15018	378
27656	Sandoz 6607	285
27657	Stauffer R-13906	113
27658	BAY 91273	441
27659	BAY 93820	442
27660	3M MBR 5667	183
27661	Chemagro 7375	264
27662	Niagara NIA 18739	168
27664	Stauffer R-15206	384
27665	Stauffer R-16745	382
27666	Stauffer R-15644	269
27695	Fisons NC 6897	115
27698	Plant Protection PP 211	371
27699	Plant Protection PP 511	372

AI3 No. (AI3-)	Company No.	Item No.
27701	CIBA C-17018 (Ciba-Geigy CGA-13608)	118
27702	CIBA C-17475	102
27703	CIBA C-17551	101
27704-X	Chevron RE-11775	123
27706	Hercules 18676	85
27707	Geigy GS-13006	327
27720	Stauffer R-15396	385
27721	Diamond Shamrock DS-12581	10
27722	Diamond Shamrock DS-12580	9
27723	Pennwalt TD-8550	88
27727	Shell SD 16961	111
27728	Chemagro 5727	188
27729	Chemagro 5777	253
27730	Chemagro 7290	254
27731	Chemagro 8096	291
27732	Chemagro 8189	290
27733	Diamond Shamrock DS-13182	457
27734-X	Thompson-Hayward TH-459-I	82
27735	Air Products AP-10045 (Lilly EL-411)	329
27736	Air Products AP-36945 (Lilly No.)	324
27738	Shell SD 14114	180
27739	Shell SD 14328	443
27740	Mobil MC 3427	144
27741	Mobil MC 3470	305
27742	Mobil MC 3515	304
27743	Mobil MC 3815	303
27744	Mobil MC 4044	314
27745	BAY 82231	402
27746	BAY 85950	401
27747	BAY 85194	256
27748	BAY 92114	440
27750	Upjohn U-31,751	71
27752	Sandoz 52,092	150
27753	Sandoz 52,097	149
27754	Sandoz 52,114	147
27755	Sandoz 52,117	153
27756	Sandoz 52,118	146
27759-X	Esso ER-6622	355
27760	Esso ER-6624	350
27761	Esso ER-8699	349
27762	Esso ER-8700	354
27764	Hoechst HOE 2960	395
27768	Monsanto MON 808	323
27769	Upjohn U-34,013	398
27770	Velsicol PCS 1475	33
27771	Velsicol PCS 1574	46
27772	Velsicol RCS 1633	77
27773	Velsicol RCS 1712	464
27774	Velsicol RCS 1718	55
27775	Velsicol RCS 1725	78
27776	Velsicol RCS 1740	53
27777	Velsicol RCS 1744	462
27778	Velsicol RCS 1758	28
27779	Velsicol RCS 1770	435
27780	Velsicol RCS 1772	26
27781	Velsicol RCS 1779	196
27782	Velsicol RCS 1799	159
27783	Velsicol RCS 1817	73
27784	Velsicol RCS 1818	175
27785	Velsicol RCS 1819	433
27786	Velsicol RCS 1821	45
27787	Velsicol RCS 1822	54
27788	Velsicol RCS 1824	463
27789	Velsicol RCS 1825	461
27790	Velsicol RCS 1831	74
27791	Velsicol RCS 1847	158
27792	Velsicol RCS 1848	27
27793	Velsicol RCS 1849	25
27794	Velsicol RCS 1872	434
27795	Velsicol RCS 1888	143
27796	Velsicol RCS 1893	432
27797	Velsicol RCS 1894	14
27798	Stauffer R-19641	343
27799	Procter & Gamble PG 131	445
27804	Esso ER-8687	406
27805	Esso ER-8989	404
27806	Esso ER-9007	348
27807	Esso ER-9198	352
27808	Esso ER-9362	351
27809	Procter & Gamble PG 132	169
27810	Plant Prot. PP 156	181
27812	Esso ER-8821	375
27813	Esso ER-9403	409
27814	Esso ER-9404	12
27815	Esso ER-9433	403
27820	Rohm & Haas RH-412	400
27822	Chevron RE-12,420	292
27823	Chevron RE-13,913	299
27824	Monsanto MON-856	201
27825	BAY 85699	249
27826	BAY HOX 1980	361

AI3 No. (AI3-)	Company No.	Item No.
27835	Esso ER-9930	11
27836	Esso ER-9281	325
27837	Esso ER-9669	353
27838	Chemagro 8556	262
27839	Chemagro 8807	263
27840	Mobil MC 4158	307
27841	BAY 88941	393
27845	BAY HOX 2052	359
27846	International Minerals & Chemical 3957	205
27848	Esso ER-9603	347
27850	Monsanto MON-768	59
27851	Diamond Shamrock DS-15647	64
27852	Uniroyal UNI-D239	452
27853	Uniroyal UNI-D459	454
27855	Uniroyal UNI-D048	449
27856	Stauffer R-16876	141
27857	Stauffer R-19738	260
27859	Stauffer R-20620	271
27860	Stauffer R-20621	268
27861	Stauffer R-20624	261
27871	BAY 93220	192
27872	Velsicol RCS 1855	252
27900	Ansul AN-57000	374
27901	Ansul AN-57605	357
27905	Pennwalt TD-1771	21
27906	Pennwalt TD-5056	60
27907	Mobil MC 5664	98
27908	CELA S-2956	370
27909	Gulf S-18219	200
27910	Gulf S-15126	199
27911	Stauffer R-19668	328
27912	Stauffer R-20625	273
27913	Stauffer R-20873	272
27914	Sandoz SAN-52-135	288
27915	Monsanto MON 720	186
27916	Shell SD 23687	265
27917	Shell SD 26890	121
27918	Squibb SQ 18,506	217
27919	CIBA C-18244	266
27941	CELA K-357	145
27942	Ansul AN 2189	132
27944	M. G. King 1-trans-dimethrin	170
27945	Stauffer R-22607	152
27946	Stauffer R-23090	258
27947	Stauffer R-23680	41
27948	Stauffer R-24413	255
27949	Upjohn U-32,635	182
27950	Ansul AN-57003	388
27953	Eli Lilly EL-473	50
27954	Hercules 16801	89
27955	Hercules 18777	87
27956	Hercules 20656	335
27957	Ansul AN-2507	438
27958	Hoffmann-LaRoche RO 3-5571	171
27967	Upjohn U-36,059	474
27968-X	Upjohn U-38,117	67
27969	CIBA C-20132	119
27975-X	Upjohn U-38,099	124
27976	Shell SD 21427	142
27977	Velsicol RCS 1761	16
27978	Velsicol RCS 2087	17
27979	Velsicol HCS 3500	283
27980	Velsicol HCS 3507	344
27981	BAY KUE 2302	79
27982	BAY KUE 2327	127
27984-X	Wyandotte BAS-2350-I	95
27985	Niagara NIA 24110	165
27987	Niagara NIA 26021	166
27989	Sandoz SAN I 52,139	148
27990	Cooper 11Z70	427
27991	Union Carbide UC 41305	426
27992	Stauffer R-17767	296
27993	Stauffer R-24711	151
27994	Ansul AN-2514	247
27995	Hercules 24108	130
27996	Hercules 24734	131
28012-X	Armour ARD-801	22
28019-X	Armour ARD-808	23
28020-X	Armour ARD-809	24
28563	Johnson 2134-R-123-4	424
28564	Johnson 2134-R-133-3	425
28565	Johnson 2134-R-143-3	421
28800	Johnson 2650-R-54	417
28801	Johnson 2650-R-57	418
28864	Johnson 2650-R-37	242
28865	Johnson 2650-R-68	455
28866	Johnson 2650-R-75	241
28867	Johnson 2650-R-31	234
28868	Johnson 2650-R-65	236
28869	Johnson 2650-R-35	240
28870	Johnson 2650-R-21	437
28874	Johnson 2650-R-90	239
28875	Johnson 2650-R-92	238
28876	Johnson 2650-R-93	216

AI3 No. (AI3-)	Company No.	Item No.
28877	Johnson 2650-R-97	221
28878	Johnson 2650-R-104	237
28926	Johnson 2650-R-112	230
28927	Johnson 2650-R-115	228
28928	Johnson 2650-R-121	235
28929	Johnson 2650-R-124	233
28930	Johnson 2650-R-129	215
28948	Johnson 2650-R-136	225
28949	Johnson 2615-R-146	220
28950	Johnson 2785-R-43	458
28951	Johnson 2815-R-3	219
28952	Johnson 2815-R-5	224
28953	Johnson 2815-R-13	218
28954	Johnson 2815-R-15	223
28962	Johnson 2785-R-59	35
28963	Johnson 2785-R-69	227
28964	Johnson 2815-R-25	222
28965	Johnson 2815-R-29	226
28966	Johnson 2815-R-32	2
28967	Johnson 2815-R-42	5
28968	Johnson 2815-R-46	3
28969	Johnson 2815-R-49	4
28970	Johnson 2815-R-53	8
28971	Johnson 2815-R-56	39
28972	Johnson 2815-R-59	37
28973	Johnson 2815-R-63	36
29005	Chevron XE-274	190
29006	BAY HOX 1619	178
29007	BAY HOX 1901	114
29008-X	Sandoz SAN I 52,129	365
29009	Sandoz SAN I 132-247	289
29010	BAY Vd 4326	52
29011	PPG-140	137
29019	Upjohn U-29,124	465
29020	Merck MK-990	439
29033	Mobil MC-6921	57
29035	Gulf S-15053-B	94
29036	Shell SD 27426	80
29037	Shell SD 28071	413
29038	Shell SD 22639	362
29040	Shell SD 33255	414
29041	Stauffer R-22500	282
29042	Stauffer R-26374	392
29043	Stauffer R-26375	411
29046	Stauffer R-28585	191
29047	Stauffer R-28627	446
29048	Eli Lilly L-5	51
29049	Eli Lilly L-9	48
29055	Shell SD 32963	49
29060	Shell SD 8713	302
29061	Pepro LS 68-1323	280
29081	Hoechst H-71-0518	318
29082	Hoechst H-71-0608	317
29083	Hoechst H-72-5757	367
29093	Stauffer R-21279	281
29094	Stauffer R-17543	250
29095	CELAMERCK CM-IT 8737	376
29096	CELAMERCK CM-IT 8986	389
29098	CELAMERCK CM-S 4781	274
29099	CELAMERCK CM-S 4506	368
29101	BAY LOW 6599	412
29102	BAY SRA 7660	410
29104-X	Pepro LS 71.187	179
61979	PCRB AD-6-86-B	198
70035	Pfizer LM-62158	211
70052	Hercules 11772	138
70053	Hercules 12693	83
70054	Hercules 11839	140
70056	Pfizer LM-62587	193
70057	Pfizer LM-62558	208
70058	Pfizer LM-62487	213
70059	Pfizer LM 14-62	197
70078	Johnson 2815-R-96	42
70079	Johnson 2815-R-99	460
70080	Johnson 2815-R-102	32
70081	Johnson 2914-R-8	31
70082	Johnson 2914-R-13	43
70083	Johnson 2932-R-4	187
70084	Johnson 2932-R-7-3	459
70085	Johnson 2932-R-9-3	38
70086	Johnson 2932-R-10-3	40
70087	Johnson 2932-R-17-3	160
70088	Johnson 2932-R-18	189
70138	Johnson 2932-R-70-4	229
70139	Johnson 2932-R-72-4	232
70140	Johnson 2932-R-74-3	231
70141	Johnson 2932-R-76-3	6
70150	BAY 74774	195
70151	BAY 79062	472
70152	BAY 79504	473
70179	Glidden-Durkee B-127-68	471
70180	Glidden-Durkee B-136-68	468
70181	Glidden-Durkee B-140-68	176
70182-X	Glidden-Durkee B-144-68	467
70280	Glidden-Durkee A-3-68	469
70281	Glidden-Durkee A-23-68	470
70282	Glidden-Durkee A-95-68	422
70283	Glidden-Durkee B-137-68	177

*1976-G.P.O.-1750-S/671-583/28

AI3 No. (AI3-)	Company No.	Item No.	AI3 No. (AI3-)	Company No.	Item No.
70322	Johnson 3207-R-33	1			
70348	Hoffmann-LaRoche RO 6-8415	185			
70349	Hoffmann-LaRoche RO 8-3627	58			
70350	Hoffmann-LaRoche RO 8-4314	184			
70351	Hoffmann-LaRoche RO 8-5496	214			
70446	Glidden GD-471	429			
70447	Glidden GD-256	466			
70484-X	Thompson-Hayward TH-7501	212			
70515	Glidden-Durkee GD-880	430			

U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
SOUTHERN REGION
P. O. BOX 53326
NEW ORLEANS, LOUISIANA 70153

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

POSTAGE AND FEES PAID
U. S. DEPARTMENT OF
AGRICULTURE
AGR 101